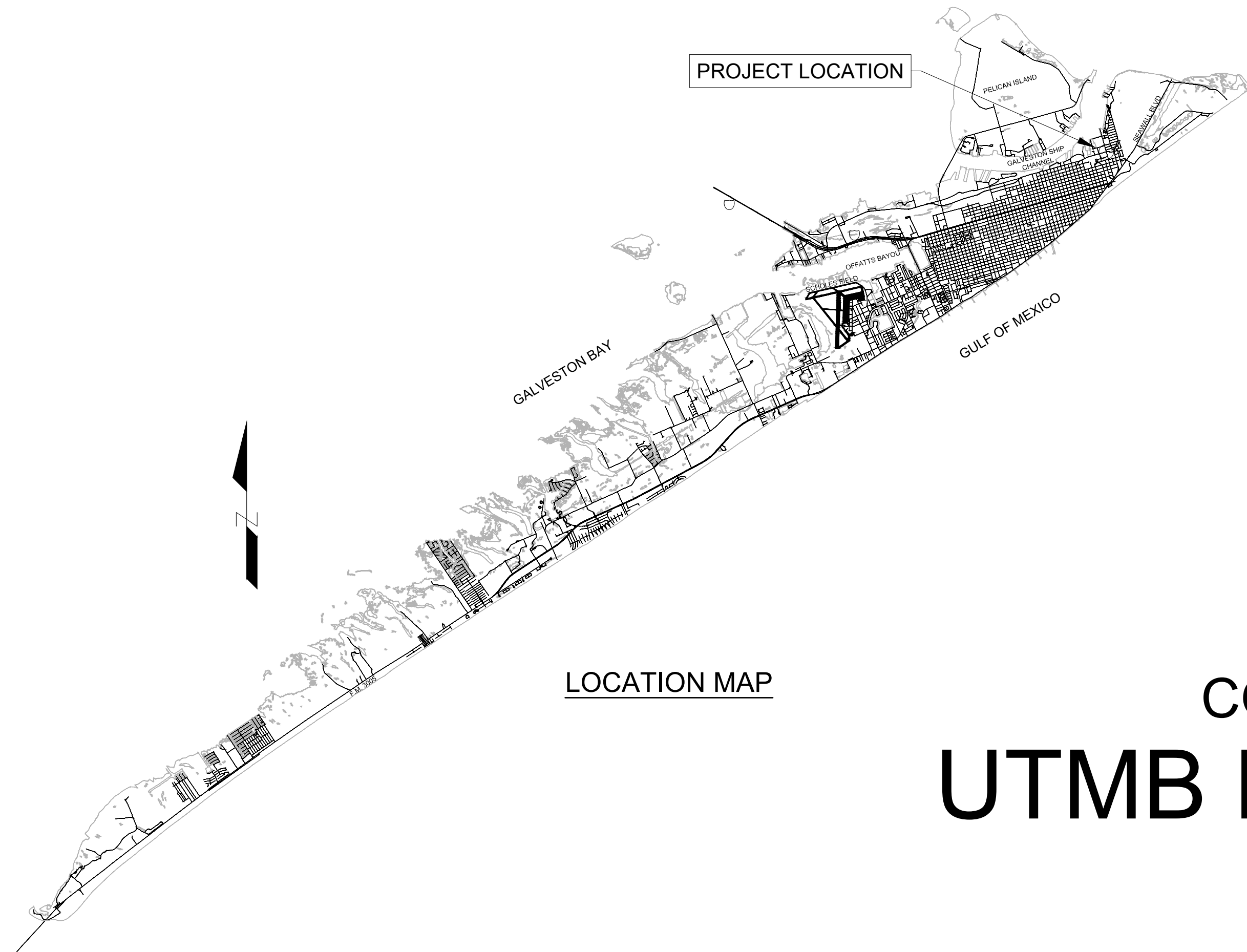
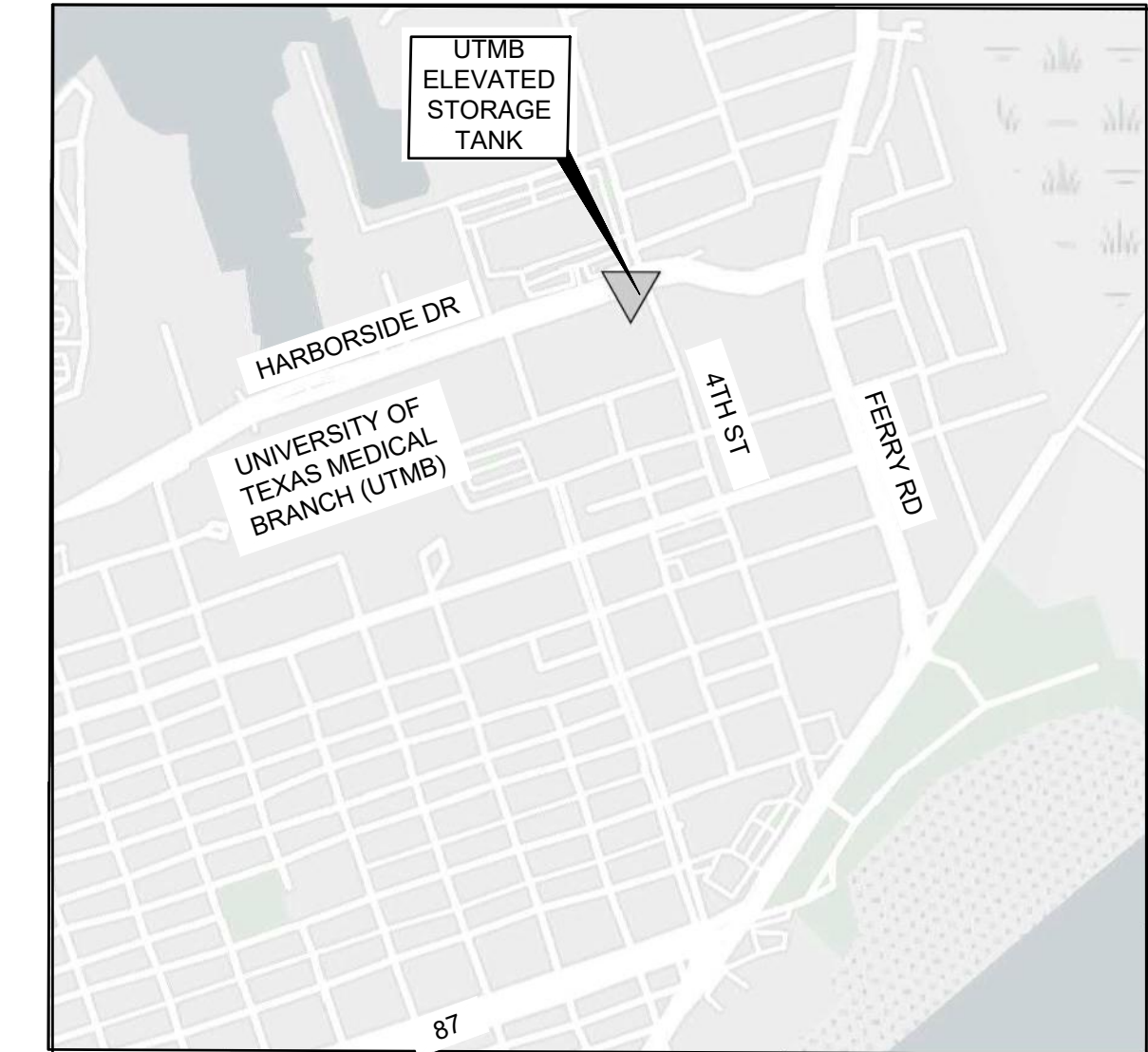


CITY OF GALVESTON

ENGINEERING DEPARTMENT



LOCATION MAP



VICINITY MAP
301 UNIVERSITY BLVD.
GALVESTON, TX 77555
KEY MAP NO. 775-K

CONSTRUCTION PLANS FOR

UTMB EST REHABILITATION

Project No: W2307

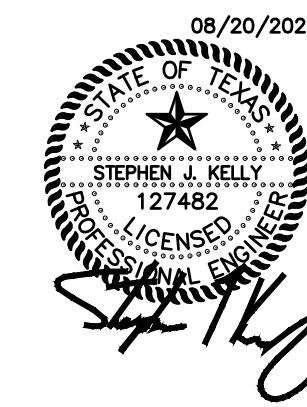
MAYOR
DR. CRAIG BROWN

CITY COUNCIL

- | | |
|-----------------------------|---------------------------|
| DISTRICT 1: SHARON B. LEWIS | DISTRICT 4: ALEX PORRETTO |
| DISTRICT 2: DAVID FINKLEA | DISTRICT 5: BEAU RAWLINS |
| DISTRICT 3: BOB BROWN | DISTRICT 6: MARIE ROBB |

CITY MANAGER
BRIAN MAXWELL

DIRECTOR OF INFRASTRUCTURE & ENGINEERING
ROBERT L. WINIECKE, P.E., C.F.M.



PREPARED BY:

Kimley»Horn

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BURRER ENGINEERING
17217 N. ELDRIDGE
TOMBALL, TEXAS 77377
PHONE: 832-761-5220
CONTACT: RICHARD GUZMAN, P.E.
TEXAS REGISTERED ENGINEERING FIRM NO. F-20420

TO ARRANGE FOR LINES TO BE TURNED OFF OF MOVED, CALL CENTERPOINT AT 713-207-2222.

NOTICE:

FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811.

VERIFICATION OF PRIVATE UTILITY LINES

DATE: _____

CENTERPOINT ENERGY/NATURAL GAS FACILITIES VERIFICATION ONLY
CENTERPOINT ENERGY NATURAL GAS UTILITIES SHOWN. (GAS SERVICE LINES ARE NOT SHOWN.) THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION.
SIGNATURE VALID FOR SIX MONTHS.

DATE: _____

CENTERPOINT ENERGY/UNDERGROUND ELECTRICAL FACILITIES VERIFICATION ONLY
(THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES - NOT TO BE USED FOR CONFLICT VERIFICATION.)
SIGNATURE VALID FOR SIX MONTHS.

DATE: _____

TEXAS GAS SERVICE FACILITIES VERIFICATION ONLY
TEXAS ONE NATURAL GAS UTILITIES SHOWN. (GAS SERVICE LINES ARE NOT SHOWN.) THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION.
SIGNATURE VALID FOR SIX MONTHS.

DATE: _____

AT&T TEXAS/SWBT FACILITIES
(APPROVAL FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY.)
SIGNATURE VALID FOR ONE YEAR.

APPROVED BY: _____

ROBERT L. WINIECKE, P.E., C.F.M.
DIRECTOR OF INFRASTRUCTURE & ENGINEERING

DATE: _____

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Plotted, By: 2025-08-20 15:54:38, Baltazar, Victoria
Last Saved: 2025-08-20 15:52:31 (GENERAL NOTES)
Filename: k:\hou_utilities\067785106_galveston_utmb\09_cad\03_plan_sheets\c-genn.dwg

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LEGEND

---	PROPERTY LINE
W	PROPOSED WATER LINE
W	EXISTING WATER LINE
gas	EXISTING GAS LINE
x	EXISTING CHAIN LINK FENCE
~~~~~	REMOVE CONCRETE CURB
---	PROPOSED SHROUD BOUNDARY
■	PROPOSED CONCRETE
■	EXISTING CONCRETE
■	REMOVE CONCRETE
▨	PROPOSED DEMOLITION
▨	PROPOSED PARKING STRIPING
⊙	PROPOSED FIRE HYDRANT
⊙	EXISTING FIRE HYDRANT
⊕	PROPOSED GATE VALVE
⊕	EXISTING GATE VALVE
●	EXISTING POWER POLE
⊙	EXISTING LIGHT POLE

# ABBREVIATIONS

CL2	CHLORINE GAS
DI	DUCTILE IRON
EL	ELEVATION
EST	ELEVATED STORAGE TANK
EX.	EXISTING
FLG	FLANGED
LAS	LIQUID AMMONIUM SULFATE
MAG	MAGNETIC
N.T.S.	NOT TO SCALE
O.C.	ON CENTER
PROP.	PROPOSED
RE/REF	REFERENCE
TYP	TYPICAL

# GENERAL NOTES

- CONTRACTOR AGREES TO TAKE SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE CITY OF GALVESTON (COG) AND THE ENGINEER OF RECORD (EOR) HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF THE WORK ON THIS PROJECT, EXCEPTING FROM LIABILITY ARISING FROM SOLE NEGLIGENCE OF THE COG OR EOR.
- ALL MATERIAL AND CONSTRUCTION SHALL CONFORM TO THE CITY'S DESIGN STANDARDS AND/OR TECHNICAL SPECIFICATIONS. CONSTRUCTION OF ALL FACILITIES TO BE DEDICATED TO THE PUBLIC SHALL BE PERFORMED PER THE REQUIREMENTS OF CITY OF GALVESTON MATERIAL AND CONSTRUCTION STANDARD SPECIFICATIONS FOR WATER AND SANITARY SEWER CONSTRUCTION.
- CONTRACTOR SHALL NOTIFY THE COG AND EOR AND ALL RESPECTIVE GOVERNMENTAL OR UTILITY AGENCIES AFFECTED BY CONSTRUCTION 72 HOURS PRIOR TO STARTING CONSTRUCTION.
- ANY DISCREPANCY OR CONFLICT WITHIN THE DRAWINGS AND SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE COG AND EOR PRIOR TO BIDDING. DISCREPANCIES OR CONFLICTS NOT BROUGHT TO THE COG AND EOR'S ATTENTION AND CLARIFIED DURING THE BIDDING OF THE PROJECT WILL BE DEEMED TO HAVE BEEN BID OR PROPOSED IN THE MORE COSTLY OR DIFFICULT MANNER, AND THE BETTER QUALITY OR GREATER QUANTITY OF THE WORK SHALL BE PROVIDED BY THE CONTRACTOR IN ACCORDANCE WITH THE COG AND EOR'S INTERPRETATION. ALL ITEMS, WORK, AND IMPROVEMENTS SHOWN OR INDICATED IN THE CONSTRUCTION DOCUMENTS SHALL BE COMPLETED FOR THE PRICES BID, WHETHER OR NOT A SEPARATE PAY ITEM IS INCLUDED IN THE CONTRACT.
- THE CONTRACTOR SHALL FURNISH ALL ASSISTANCE REQUIRED OF HIM BY ALL COG REPRESENTATIVE IN OBTAINING SAMPLES FOR THE PURPOSES OF TESTING AT THE EXPENSE OF THE CONTRACTOR.
- IF IN THE OPINION OF THE INSPECTOR, BASED ON TESTING SERVICE REPORTS AND INSPECTION, MATERIALS OR COMPACTION ARE BELOW THE SPECIFIED REQUIREMENTS, THE CONTRACTOR SHALL CORRECT THE DEFICIENCY AND RE-TEST TO OBTAIN THE SPECIFIED PARAMETERS AT NO ADDITIONAL EXPENSE.
- THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PERFORMING ALL CONSTRUCTION LAYOUTS FROM THE SITE LAYOUT CONTROL POINTS, AND FROM THE DIMENSIONS AND CENTERLINES SHOWN. THE CONTRACTOR MUST NOTIFY THE COG AND EOR OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES, WHETHER PRIVATE OR PUBLIC, PRIOR TO EXCAVATION. THE CONTRACTOR SHALL POTHOLE EXISTING UTILITIES TO VERIFY DEPTH, NO SEPARATE PAY ITEM. THE INFORMATION AND DATE SHOWN WITH RESPECT TO EXISTING UNDERGROUND FACILITIES AT OR CONTIGUOUS TO THE SITE IS APPROXIMATE AND BASED ON INFORMATION AND DATA FURNISHED BY THE COGS OF SUCH UNDERGROUND FACILITIES OR ON PHYSICAL APPURTENANCES OBSERVED IN THE FIELD. THE COG AND EOR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ANY SUCH INFORMATION OR DATA; THE CONTRACTOR SHALL HAVE FULL RESPONSIBILITY FOR REVIEWING AND CHECKING ALL SUCH INFORMATION AND DATA, FOR LOCATING ALL UNDERGROUND FACILITIES, FOR COORDINATION OF THE WORK WITH THE COGS OF SUCH UNDERGROUND FACILITIES DURING CONSTRUCTION, FOR THE SAFETY AND PROTECTION THEREOF, AND REPAIRING ANY DAMAGE THERETO RESULTING FROM THE WORK, THE COST ALL OF WHICH WILL BE CONSIDERED AS HAVING BEEN INCLUDED IN THE CONTRACT PRICE. THE CONTRACTOR SHALL NOTIFY ANY AFFECTED UTILITY COMPANIES OR AGENCIES IN WRITING AT LEAST 72 HOURS PRIOR TO BEGINNING CONSTRUCTION.
- CONTRACTOR SHALL BE RESPONSIBLE DURING TANK OVERFLOW TESTING TO PROVIDE A CONTROLLED OVERFLOW THAT DOES NOT ADVERSELY IMPACT THE SITE, OR SURROUNDING AREAS. OVERFLOW FROM TANK SITE MUST FLOW TO ADEQUATE EXISTING DRAINAGE FACILITY. COG SHALL BE NOTIFIED A MINIMUM OF 48 HOURS PRIOR TO THE TEST.
- UNTIL THE WORK IS FORMALLY ACCEPTED BY THE COG IN WRITING, THE PROJECT SHALL BE UNDER THE CHARGE AND CUSTODY OF THE CONTRACTOR AND THE CONTRACTOR SHALL TAKE EVERY NECESSARY PRECAUTION AGAINST INJURY OR DAMAGE TO WORK.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO FURNISH ALL MATERIAL AND LABOR TO CONSTRUCT THE FACILITY AS SHOWN AND DESCRIBED IN THE CONSTRUCTION DOCUMENTS IN ACCORDANCE WITH THE APPROPRIATE APPROVING AUTHORITIES, SPECIFICATIONS AND REQUIREMENTS.
- THE CONTRACTOR SHALL CONTACT ALL FRANCHISED UTILITY COMPANIES TO HAVE THEM LOCATE EXISTING UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE THE EXACT LOCATION AND DEPTH OF ALL FRANCHISED UTILITY SERVICES AND ANY REQUIRED RELOCATION AND/OR EXTENSIONS. SERVICES SHOWN ON THE PLANS ARE CONCEPTUAL.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL PUBLIC UTILITIES IN THE CONSTRUCTION OF THIS PROJECT. ALL MANHOLES, CLEANOUTS, VALVE BOXES, FIRE HYDRANTS, ETC., MUST BE ADJUSTED TO PROPER GRADE BY THE CONTRACTOR PRIOR TO AND AFTER PLACING OF PERMANENT PAVING. UTILITIES MUST BE MAINTAINED TO PROPER LINE AND GRADE DURING CONSTRUCTION OF THE PAVING FOR THIS PROJECT.
- BRACING OF UTILITY POLES MAY BE REQUIRED BY UTILITY COMPANIES WHEN TRENCHING OR EXCAVATION IS IN CLOSE PROXIMITY TO THE POLES. THE COST OF BRACING POLES WILL BE PAID BY THE CONTRACTOR. THERE IS NO SEPARATE PAY ITEM FOR THIS WORK. THE COST IS INCIDENTAL TO THE VARIOUS PAY ITEMS FOR INSTALLATION OF PIPE.
- THE CONTRACTOR SHALL IMMEDIATELY REPAIR OR REPLACE ANY PHYSICAL DAMAGE TO PRIVATE PROPERTY, INCLUDING, BUT NOT LIMITED TO FENCES, WALLS, PAVEMENT, GRASS, TREES, AND LAWN SPRINKLER AND IRRIGATION SYSTEMS AT NO COST TO THE COG. THIS WORK SHALL BE SUBSIDIARY TO THE CONTRACT (UNLESS OTHERWISE NOTED) AND IS NOT A SEPARATE PAY ITEM
- THE CONTRACTOR SHALL HAVE AVAILABLE AT THE JOB SITE AT ALL TIMES ONE COPY OF THE CONTRACT DOCUMENTS INCLUDING PLANS, SPECIFICATIONS, AND SPECIAL CONDITIONS, COPIES OF ANY REQUIRED CONSTRUCTION PERMITS, EROSION CONTROL PLANS, SWPPP AND INSPECTION REPORTS.
- NO FIELD CHANGES OR DEVIATIONS FROM DESIGN ARE TO BE MADE WITHOUT PRIOR APPROVAL OF THE COG AND NOTIFICATION TO THE ENGINEER. NO CONSIDERATION WILL BE GIVEN TO CHANGE ORDERS FOR WHICH THE COG AND ENGINEER WERE NOT CONTACTED PRIOR TO CONSTRUCTION OF THE AFFECTED ITEM.
- ALL COPIES OF COMPACTION, CONCRETE AND OTHER REQUIRED TEST RESULTS ARE TO BE SENT TO THE CITY ENGINEER AND CIVIL ENGINEER OF RECORD DIRECTLY FROM THE TESTING AGENCY.
- ALL NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES, JURISDICTIONAL AGENCIES AND/OR UTILITY SERVICE COMPANIES SHALL BE PERFORMED PRIOR TO ANNOUNCED BUILDING POSSESSION AND THE FINAL CONNECTION OF SERVICES.
- CONTRACTOR SHALL THOROUGHLY CHECK COORDINATION OF CIVIL, ELECTRICAL, AND OTHER PLANS PRIOR TO COMMENCING CONSTRUCTION. COG AND ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCY PRIOR TO COMMENCING WITH CONSTRUCTION.
- ALL SLOPES AND AREAS DISTURBED BY CONSTRUCTION SHALL BE GRADED SMOOTH.

- SEDIMENTATION OR TURBID DISCHARGES. ANY AREAS DISTURBED FOR ANY REASON PRIOR TO FINAL ACCEPTANCE OF THE JOB SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE COG.
- ALL CUT OR FILL SLOPES SHALL BE 4:1 OR FLATTER UNLESS OTHERWISE SHOWN.
  - THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTROL OF DUST AND DIRT RISING AND SCATTERING IN THE AIR DURING CONSTRUCTION AND SHALL PROVIDE WATER SPRINKLING OR OTHER SUITABLE METHODS OF CONTROL, AS APPROVED BY THE COG AND EOR, AT THE SOLE EXPENSE OF THE CONTRACTOR. THE CONTRACTOR SHALL COMPLY WITH ALL GOVERNING REGULATIONS PERTAINING TO ENVIRONMENTAL PROTECTION.
  - UPON COMPLETION OF CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE THE CIVIL ENGINEER A COPY OF AS-BUILT PLANS IDENTIFYING ALL DEVIATIONS OR VARIATIONS FROM THE ORIGINAL PLANS.
  - ALL EXISTING PAVEMENT, ADJACENT UTILITIES, STRUCTURES, ETC., DISTURBED AS A RESULT OF THE NEW CONSTRUCTION, SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE COG.
  - ALL WORK REQUIRED BY THESE PLANS SHALL BE CONDUCTED IN CONFORMANCE WITH CURRENT SAFETY CODES AND STANDARDS WITH JURISDICTION OVER THIS PROJECT.
  - IN ALL AREAS WHERE AN EXISTING PAVED SURFACE (SUCH AS A ROADWAY, DRIVEWAY, OR SIDEWALK) ARE TO BE IMPACTED BY CONSTRUCTION, THE CONTRACTOR SHALL SAW-CUT THE PAVED SURFACE PRIOR TO EXCAVATING, ASSURING CLEAN & STRAIGHT CUT TO FULL DEPTH OF THE PAVED SURFACE.

### TRAFFIC CONTROL

- BARICADES AND WARNING SIGNS SHALL CONFORM TO THE CURRENT TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND ARE TO BE GENERALLY LOCATED TO AFFORD MAXIMUM PROTECTION TO THE PUBLIC AS WELL AS CONSTRUCTION PERSONNEL AND EQUIPMENT AND TO ASSURE AN EXPEDITIOUS TRAFFIC FLOW AT ALL TIMES. DURING THE PROGRESS OF WORK, THE CONTRACTOR SHALL PROVIDE ACCESS FOR LOCAL TRAFFIC.
- THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN TO THE COG AND EOR PRIOR TO COMMENCING WORK.
- CONTRACTOR WILL FURNISH AND MAINTAIN ALL REQUIRED TRAFFIC CONTROL DEVICES, INCLUDING FLAGMEN WHEN NECESSARY, PER TMUTOD AND AS DIRECTED BY THE COG, TO PROPERLY WARN, GUIDE, AND CONTROL TRAFFIC THRU OR AROUND THE CONSTRUCTION AREA AT ALL TIMES DURING CONSTRUCTION.

### SUBMITTALS

- THE CONTRACTOR SHALL SUBMIT A SEQUENCE OF WORK SCHEDULE TO THE COG AND EOR PRIOR TO COMMENCING WORK. ALL PHASES OF CONSTRUCTION MUST BE COORDINATED WITH THE COG AND EOR. FIELD ADJUSTMENTS MAY BE NECESSARY AND WILL BE CARRIED OUT AS DIRECTED BY THE COG AT NO EXTRA PAY.

### RECORDS

- THE CONTRACTOR SHALL MAINTAIN A NEAT AND ACCURATE RECORD OF CONSTRUCTION FOR COG'S AND EOR'S RECORDS. THE CONTRACTOR SHALL PROVIDE COG AND THE EOR WITH FULL SIZE REPRODUCIBLE MARKUPS THAT RECORD ALL CONSTRUCTION DEVIATING FROM THE PLANS.

### WATERLINE

- POLYVINYL CHLORIDE (PVC) PIPE SHALL BE DR-14 AWWA C900. CONTRACTOR SHALL DEFLECT PIPE PER MANUFACTURER'S RECOMMENDATIONS.
- ALL STAINLESS STEEL PIPE SHALL BE AWWA C220.
- ALL PIPE AND PIPE APPURTENANCES SHALL BE BLUE IN COLOR.
- ALL UNDERGROUND WATERLINES SHALL MAINTAIN A MINIMUM COVER OF 48 INCHES FROM TOP OF PIPE TO FINAL FINISH GROUND/STREET/ELEVATION AND A MINIMUM COVER OF 60 INCHES FROM TOP OF PIPE TO TOP OF GROUND IN UNPAVED AREAS.
- THE CONTRACTOR SHALL COORDINATE WITH THE CITY OF GALVESTON CONSTRUCTION DEPARTMENT A MINIMUM OF 48 HOURS PRIOR TO COMMENCEMENT. THE CITY WILL PROVIDE NOTIFICATION PROCEDURES FOR THE CONTRACTOR TO USE TO NOTIFY ADJACENT PROPERTY OWNERS.
- THE CONTRACTOR SHALL NOTIFY THE CITY OF GALVESTON INSPECTOR 24 HOURS PRIOR TO TRENCHING OR PIPE LAYING OPERATIONS. PIPE BEDDING AND JOINTS MUST BE INSPECTED PRIOR TO PRIMARY BACKFILLING.
- LOCATIONS AND DEPTHS OF EXISTING UTILITIES SHOWN ON THE PLANS ARE UNDERSTOOD TO BE APPROXIMATE. ACTUAL LOCATIONS AND DEPTHS MUST BE FIELD VERIFIED BY THE CONTRACTOR 48 HOURS PRIOR TO CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE UTILITY SERVICE LINES AS REQUIRED FOR CONSTRUCTION AND TO PROTECT THEM DURING CONSTRUCTION AT NO COST TO THE CITY OF GALVESTON.
- THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF UNDERGROUND UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON PLANS OR NOT. THE FOLLOWING CONTACT INFORMATION ARE SUPPLIED FOR VERIFICATION PURPOSES:  
  
CITY OF GALVESTON PUBLIC WORKS: 409-797-3630  
CITY OF GALVESTON WATER AND SEWER: 409-797-3963  
TEXAS STATE WIDE ONE CALL LOCATOR: 1-800-545-6005 OR 811  
TEXAS GAS SERVICE: 1-800-700-2443  
CENTER POINT ENERGY: 409-765-4022  
COMCAST: 1-800-934-6489  
AT&T: 1-800-288-2020
- THE CONTRACTOR SHALL COMPLY WITH THE CITY OF GALVESTON OR OTHER GOVERNING MUNICIPALITY TREE ORDINANCES WHEN EXCAVATING NEAR TREES.
- PRIOR TO TIE-INS, ANY SHUTDOWNS OF EXISTING MAINS OF ANY SIZE MUST BE COORDINATED WITH THE CITY OF GALVESTON PUBLIC WORKS SUPERINTENDENT AT LEAST TWO WEEKS IN ADVANCE OF THE SHUTDOWN. THE CONTRACTOR MUST ALSO PROVIDE A SEQUENCE OF WORK AS RELATED TO THE TIE-INS; THIS IS AT NO ADDITIONAL COST TO THE CITY OF GALVESTON OR THE PROJECT AND IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SEQUENCE THE WORK ACCORDINGLY.
- ANY WORK COMPLETED WITHOUT PRIOR WRITTEN AUTHORIZATION WHICH IS NOT INCLUDED IN THESE PLANS AND SPECIFICATIONS WILL NOT BE COMPENSATED BY THE CITY OF GALVESTON.

CITY OF GALVESTON PUBLIC WORKS: 409-797-3630  
CITY OF GALVESTON WATER AND SEWER: 409-797-3963  
TEXAS STATE WIDE ONE CALL LOCATOR: 1-800-545-6005 OR 811  
TEXAS GAS SERVICE: 1-800-700-2443  
CENTER POINT ENERGY: 409-765-4022  
COMCAST: 1-800-934-6489  
AT&T: 1-800-288-2020

- THE CONTRACTOR SHALL COMPLY WITH THE CITY OF GALVESTON OR OTHER GOVERNING MUNICIPALITY TREE ORDINANCES WHEN EXCAVATING NEAR TREES.
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- ANY WORK COMPLETED WITHOUT PRIOR WRITTEN AUTHORIZATION WHICH IS NOT INCLUDED IN THESE PLANS AND SPECIFICATIONS WILL NOT BE COMPENSATED BY THE CITY OF GALVESTON.

### UTILITY NOTES:

- THE ACCURATE LOCATION OF ALL UTILITIES, STRUCTURES, LANDSCAPING, IRRIGATION, ETC., AS SHOWN IS APPROXIMATE AND ALL MAY NOT BE SHOWN ON THE PLANS, QUANTIFIED ON THE BID FORMS, OR DETAILED IN THE SPECIFICATIONS. CONTRACTOR IS RESPONSIBLE FOR CONFIRMING THE MATERIAL SIZE, LOCATION, QUANTITY, AND OTHER DETAILS OF ALL OBJECTS INCLUDING PIPELINES, STRUCTURES, CONDUITS, CABLES, SURFACE, SUBSURFACE AND ENVIRONMENTAL CONDITIONS (EX: WATER DEPTH, ABANDONED DUCT BANKS, RAIL, CONCRETE BLOCKS), ETC.

- THE CITY OF GALVESTON REQUIRES THE CONTRACTOR TO PRE-LOCATE, PRE-VERIFY AND PRE-INVESTIGATE ALL UTILITIES, OBSTRUCTIONS AND SURFACE AND SUBSURFACE ENVIRONMENTAL CONDITIONS (SHOWN OR NOT SHOWN) BEFORE CONSTRUCTION OF THIS PROJECT, BY WHATEVER METHOD, SUBJECT TO APPROVAL BY THE COG WHICH INCLUDES BUT NOT LIMITED TO THE FOLLOWING:  
  
(A) UTILIZATION OF METER DETECTION EQUIPMENT AND PROBES.  
(B) EXCAVATION, EX: HYDROVAC POT HOLING  
(C) OPENING MANHOLES TO DETERMINE FLOW LINES OF STORM PIPES AND SANITARY SEWER  
(D) MEASURING THE DEPTH TO VALVE NUT AND ADDING 18" TO DETERMINE THE DEPTH TO WATERLINES.  
(E) PROBING TO IDENTIFY SPRINKLERS, STORM SYSTEMS, WATER/SANITARY SERVICES, ETC.  
(F) SUBSURFACE UTILITY INVESTIGATION (SUE) LEVEL A THROUGH D SURVEY WHICH INCLUDES I THRU V.

- ALL INVESTIGATIVE WORK DONE AND ALL REPAIRS REQUIRED AFTER INVESTIGATION SHALL BE ACCOMPLISHED BY THE CONTRACTOR (NO SEPARATE PAY).
- CONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR INCREASE IN COST, DELAYS IN SCHEDULE, IMPACT TO THE PUBLIC, CHANGES IN THEIR CONSTRUCTION SCOPE, INCLUDING ANY AND ALL DAMAGES WHICH MIGHT BE CAUSED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ALL UTILITIES, STRUCTURES AND OTHER OBSTRUCTIONS
- CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL UTILITY COMPANIES AND '811 CALL BEFORE YOU DIG AT LEAST 14 CALENDAR DAYS PRIOR TO CONSTRUCTION IN AREA OF KNOWN AND UNKNOWN UTILITIES WHICH MAY OR MAY NOT BE SHOWN ON THE PLANS.
- IF THE CONTRACTOR REQUESTS THE CITY STAFF TO ASSIST WITH LOCATING UTILITIES, STRUCTURES OR OTHER SURFACE AND BELOW GROUND FEATURES, THE CITY WILL INVOICE THE CONTRACTOR FULLY FOR SUCH SERVICES, AND COST WILL BE DEDUCTED FROM THE CONTRACTORS PAY ESTIMATES.

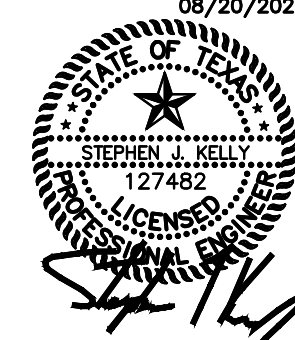
### EROSION CONTROL/STORMWATER POLLUTION PREVENTION PLAN NOTES

- ALL EROSION CONTROL DEVICES SHALL BE INSTALLED PRIOR TO SITE DISTURBANCE AND SHALL REMAIN IN PLACE UNTIL FINAL GRADING AND PAVING IS COMPLETE.
- THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE, AND LOCAL EROSION, CONSERVATION, AND SILTATION ORDINANCES. THE CONTRACTOR SHALL REMOVE ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF PERMANENT DRAINAGE. THE CONTRACTOR MUST USE SEDIMENT FILTERS OR OTHER MEASURES APPROVED BY THE ENGINEER AND CONSTRUCTION MANAGER TO PREVENT SILT AND CONSTRUCTION DEBRIS FROM CLOGGING STORM SEWER PIPES OR PROPOSED OR EXISTING INLETS, OR FROM BEING TRANSPORTED TO ADJACENT PROPERTIES AND STREET RIGHT OF WAYS.
- SITE ENTRY AND EXIT LOCATIONS SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAYS. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ON A PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY. WHEN WASHING IS REQUIRED TO REMOVE SEDIMENT PRIOR TO ENTRANCE TO A PUBLIC ROADWAY, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE. ALL FINES IMPOSED FOR TRACKING ONTO PUBLIC ROADS SHALL BE PAID BY THE CONTRACTOR.
- CONTRACTOR IS RESPONSIBLE FOR PROPER MAINTENANCE OF THE REQUIRED EROSION CONTROL DEVICES THROUGHOUT THE ENTIRE CONSTRUCTION PROCESS. EROSION CONTROLS SHALL BE REPAIRED OR REPLACED AS INSPECTION DEEMS NECESSARY, OR AS DIRECTED BY THE COG'S REPRESENTATIVE. ACCUMULATED SILT IN ANY EROSION CONTROL DEVICE SHALL BE REMOVED AND SHALL BE DISTRIBUTED ON SITE IN A MANNER NOT CONTRIBUTING TO ADDITIONAL SILTATION.
- THE CONTRACTOR IS RESPONSIBLE FOR REESTABLISHING ANY EROSION CONTROL DEVICE WHICH THEY DISTURB. EACH CONTRACTOR SHALL NOTIFY THE COG'S REPRESENTATIVE OF ANY DEFICIENCIES IN THE ESTABLISHED EROSION CONTROL MEASURES WHICH MAY LEAD TO UNAUTHORIZED DISCHARGE OR STORM WATER POLLUTION, SEDIMENTATION OR OTHER POLLUTANTS. UNAUTHORIZED POLLUTANTS INCLUDE, BUT ARE NOT LIMITED TO, EXCESS CONCRETE DUMPING OR CONCRETE RESIDUE, PAINTS, SOLVENTS, GREASES, FUEL AND LUBE OIL, PESTICIDES, AND SOLID WASTE MATERIALS.
- THE CONTRACTOR SHALL MAINTAIN ADEQUATE SITE DRAINAGE DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR SHALL USE FILTER BARRIER (OR OTHER METHOD APPROVED BY THE ENGINEER AND CITY) AS REQUIRED TO PREVENT ADVERSE OFF SITE IMPACT OR STORM WATER QUALITY FROM SILT AND CONSTRUCTION DEBRIS FLOWING ONTO ADJACENT PROPERTIES AS REQUIRED BY THE CITY. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE, OR LOCAL EROSION, CONSERVATION, AND SILTATION ORDINANCES. CONTRACTOR SHALL REMOVE ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF PERMANENT DRAINAGE FACILITIES AND THE ESTABLISHMENT OF A STAND OF GRASS OR OTHER GROWTH TO PREVENT EROSION.
- CONTRACTOR SHALL PROVIDE ADEQUATE EROSION CONTROL DEVICES DURING THE PHASED CONSTRUCTION OF THIS PROJECT.
- CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL SILT AND DEBRIS OFF SITE FROM THE EXISTING ROADWAYS AND PROJECT SITE THAT ARE A RESULT OF THE PROPOSED CONSTRUCTION.
- THE CONTRACTOR SHALL SALVAGE AND PROTECT ALL EXISTING POWER POLES, SIGNS, MANHOLES, TELEPHONE RISERS, WATER VALVES, ETC. DURING ALL CONSTRUCTION PHASES UNLESS NOTED OTHERWISE.
- PRE-CONSTRUCTION MEETING WITH COG REQUIRED PRIOR TO START OF CONSTRUCTION TO VERIFY CONTRACTOR'S STAGING AREA AND SEDIMENT AND EROSION CONTROLS.
- SILT FENCE AND INLET SEDIMENT BARRIERS SHALL REMAIN IN PLACE UNTIL REVEGETATION HAS BEEN APPROVED BY ENGINEER.
- A CONSTRUCTION SITE NOTICE SHALL POSTED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.
- ALL CONTRACTORS AND SUBCONTRACTORS PROVIDING SERVICES RELATED TO THE SWPPP SHALL SIGN A CONTRACTOR CERTIFICATION STATEMENT ACKNOWLEDGING THEIR RESPONSIBILITIES AS SPECIFIED IN THE SWPPP.
- A COPY OF THE SWPPP, INCLUDING CONTRACTOR CERTIFICATIONS AND ANY REVISIONS, SHALL BE SUBMITTED TO THE CITY AND FILED WITH THE CONSTRUCTION PLANS, AND SHALL BE RETAINED ON-SITE DURING CONSTRUCTION.
- A NOTICE OF TERMINATION (N.O.T.) SHALL BE SUBMITTED TO THE TCEQ BY THE CONTRACTOR WHEN THE SITE HAS 100% OF THE DISTURBED AREAS STABILIZED AND THE SITE NO LONGER HAS STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES.
- CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARING, SUBMITTING, AND POSTING THE NOTICE OF INTENT AND STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IN ACCORDANCE WITH STATE RULES AND REGULATIONS.
- CONTRACTOR SHALL OBTAIN AND MAINTAIN SWPPP THROUGHOUT THE ENTIRE DURATION OF CONSTRUCTION AND SURFACE IS RESTORED.

NO.	DATE	BY



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08/20/2025

KHA PROJECT: 067785106  
DATE: AUGUST 2025  
SCALE AS SHOWN  
DESIGNED BY: VGB  
DRAWN BY: NMT  
CHECKED BY: SKK

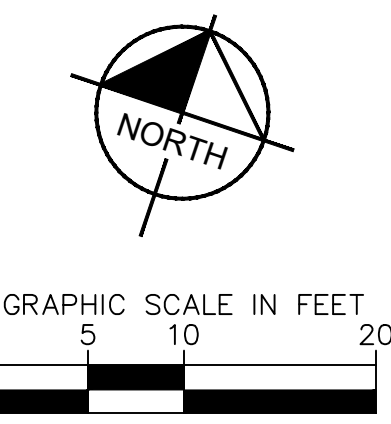
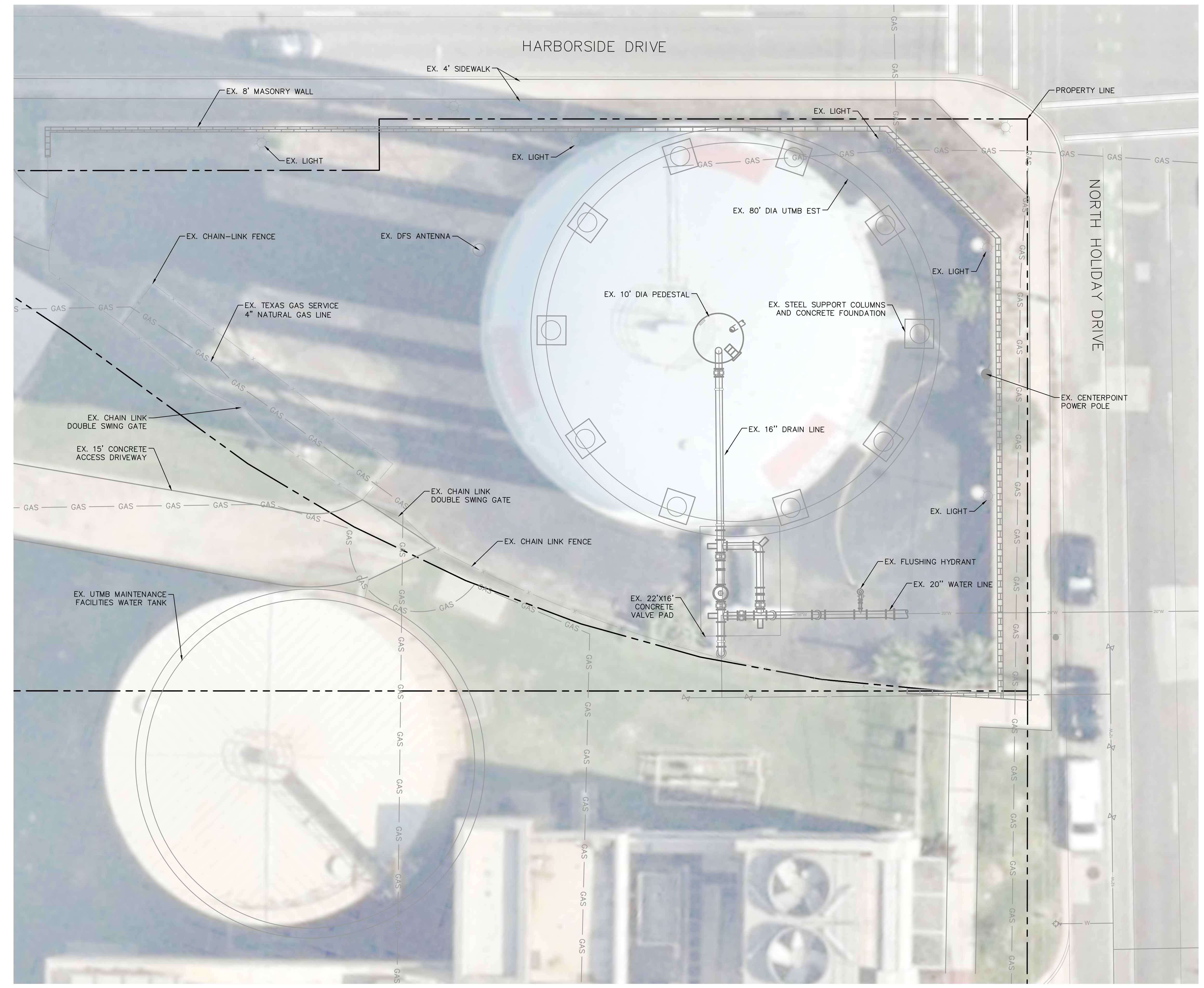
**CITY OF GALVESTON**  
**UTMB EST**  
**REHABILITATION**

**GENERAL NOTES**

SHEET NUMBER  
**C-1**

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- EXISTING SITE NOTES**
1. THE CONTRACTOR SHALL CONTACT ALL FRANCHISED UTILITY COMPANIES TO HAVE THEM LOCATE EXISTING UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE THE EXACT LOCATION AND DEPTH OF ALL FRANCHISED UTILITY SERVICES AND ANY REQUIRED RELOCATION AND/OR EXTENSIONS. SERVICES SHOWN ON THE PLANS ARE CONCEPTUAL.
  2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL PUBLIC UTILITIES IN THE CONSTRUCTION OF THIS PROJECT. ALL MANHOLES, CLEANOUTS, VALVE BOXES, FIRE HYDRANTS, ETC., MUST BE ADJUSTED TO PROPER GRADE BY THE CONTRACTOR PRIOR TO AND AFTER PLACING OF PERMANENT PAVING. UTILITIES MUST BE MAINTAINED TO PROPER LINE AND GRADE DURING CONSTRUCTION OF THE PAVING FOR THIS PROJECT.
  3. ALL EXISTING PAVEMENT, ADJACENT UTILITIES, STRUCTURES, ETC., DISTURBED AS A RESULT OF THE NEW CONSTRUCTION, SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE COG.
  4. IN ALL AREAS WHERE AN EXISTING PAVED SURFACE (SUCH AS A ROADWAY, DRIVEWAY, OR SIDEWALK) ARE TO BE IMPACTED BY CONSTRUCTION, THE CONTRACTOR SHALL SAW-CUT THE PAVED SURFACE PRIOR TO EXCAVATING, ASSURING CLEAN & STRAIGHT CUT TO FULL DEPTH OF THE PAVED SURFACE.

NO.	REVISIONS	DATE	BY

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08/20/2025

DESIGNED BY: VGB  
 DRAWN BY: NMT  
 CHECKED BY: SUK

**CITY OF GALVESTON  
 UTMB EST  
 REHABILITATION**

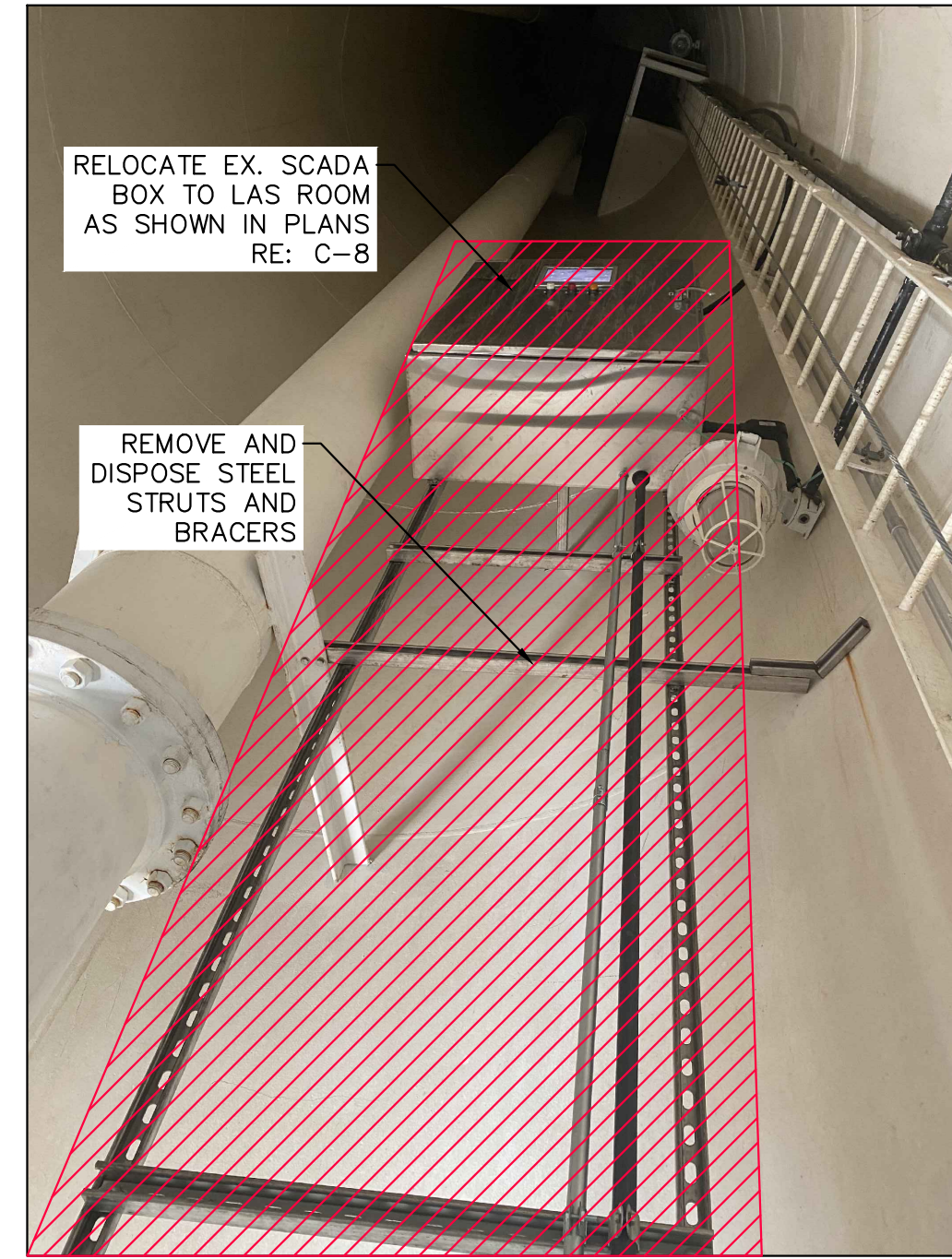
**EXISTING SITE PLAN**

SHEET NUMBER  
**C-2**



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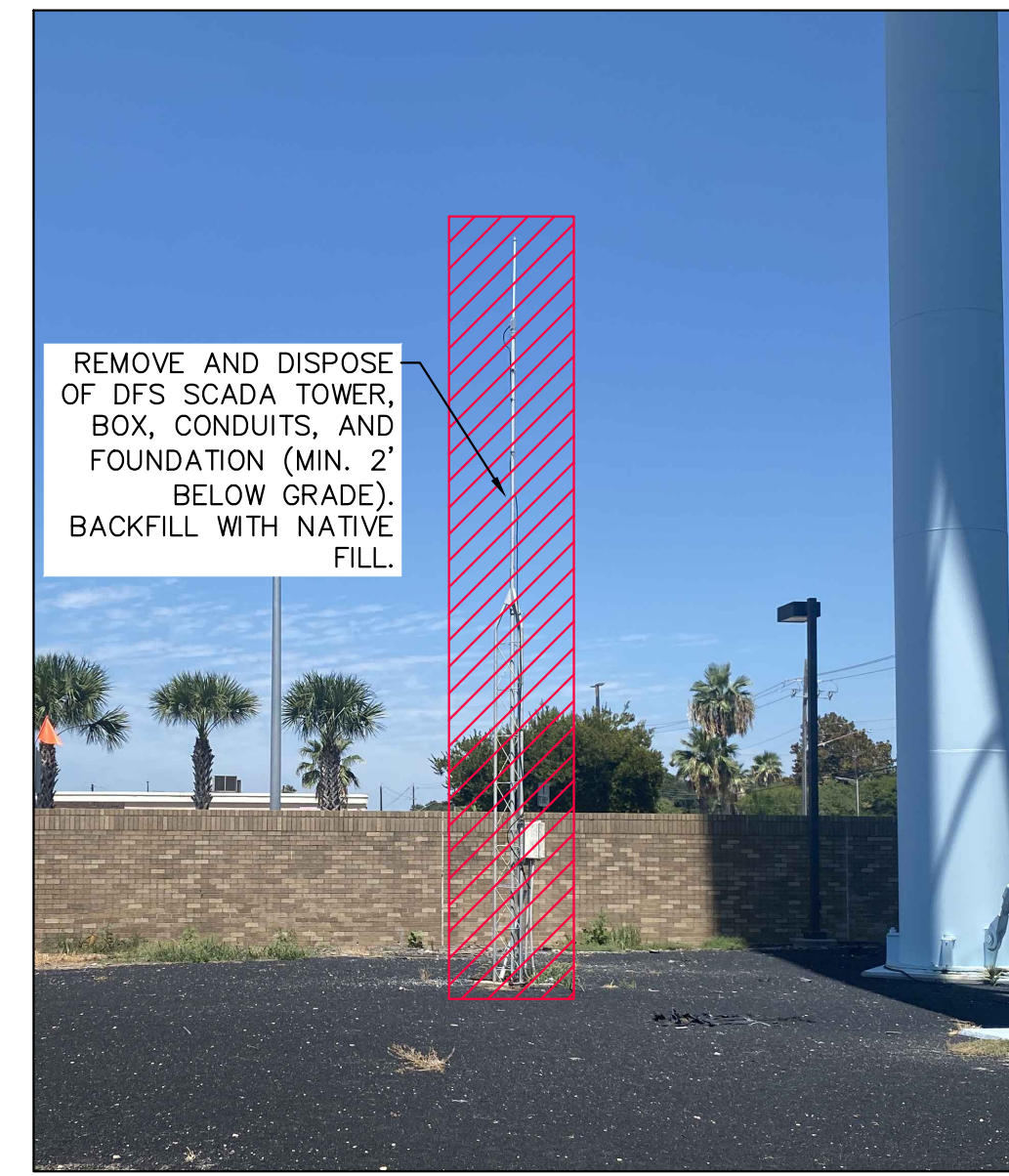
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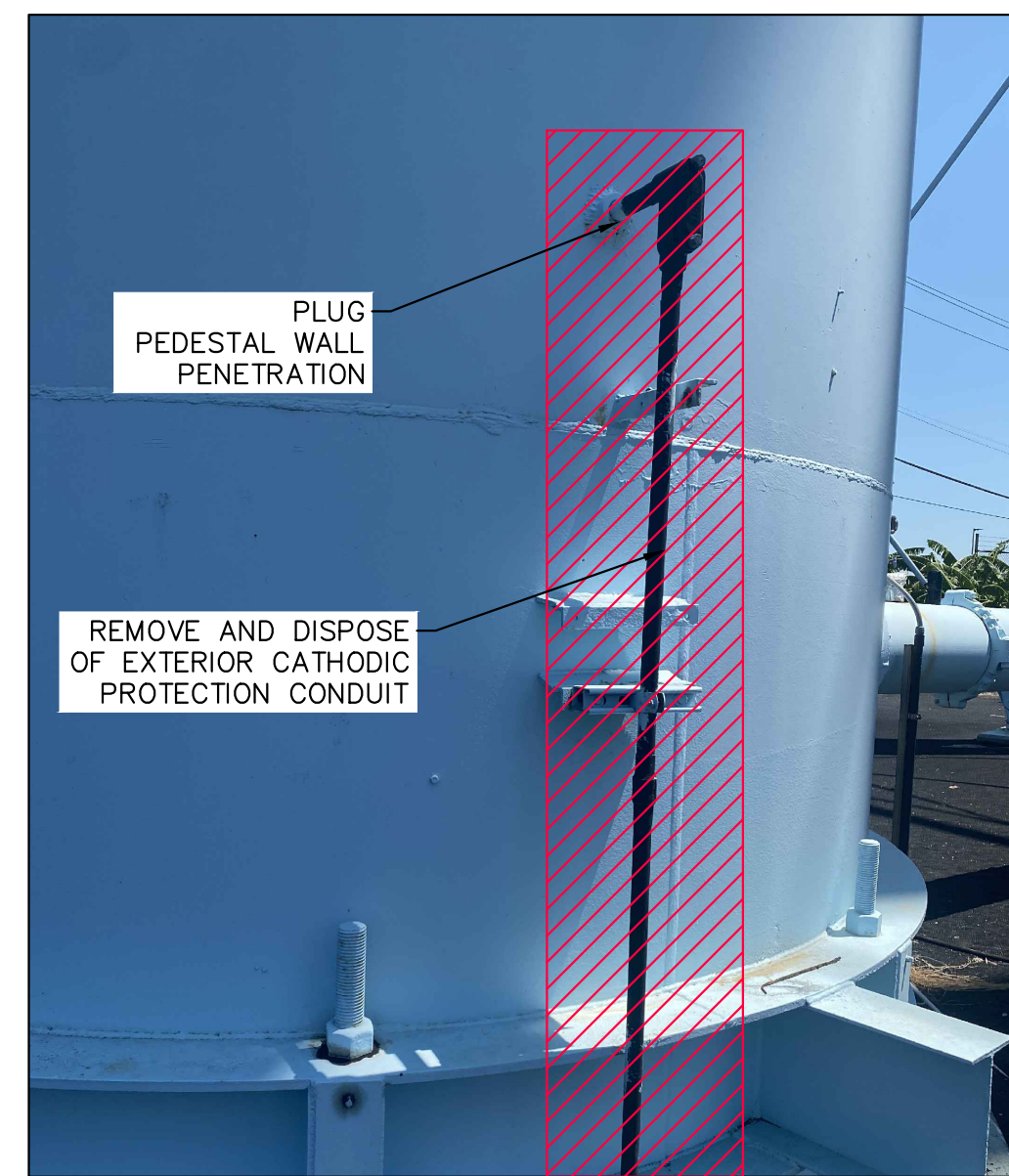
1 SCADA BOX IN PEDESTAL



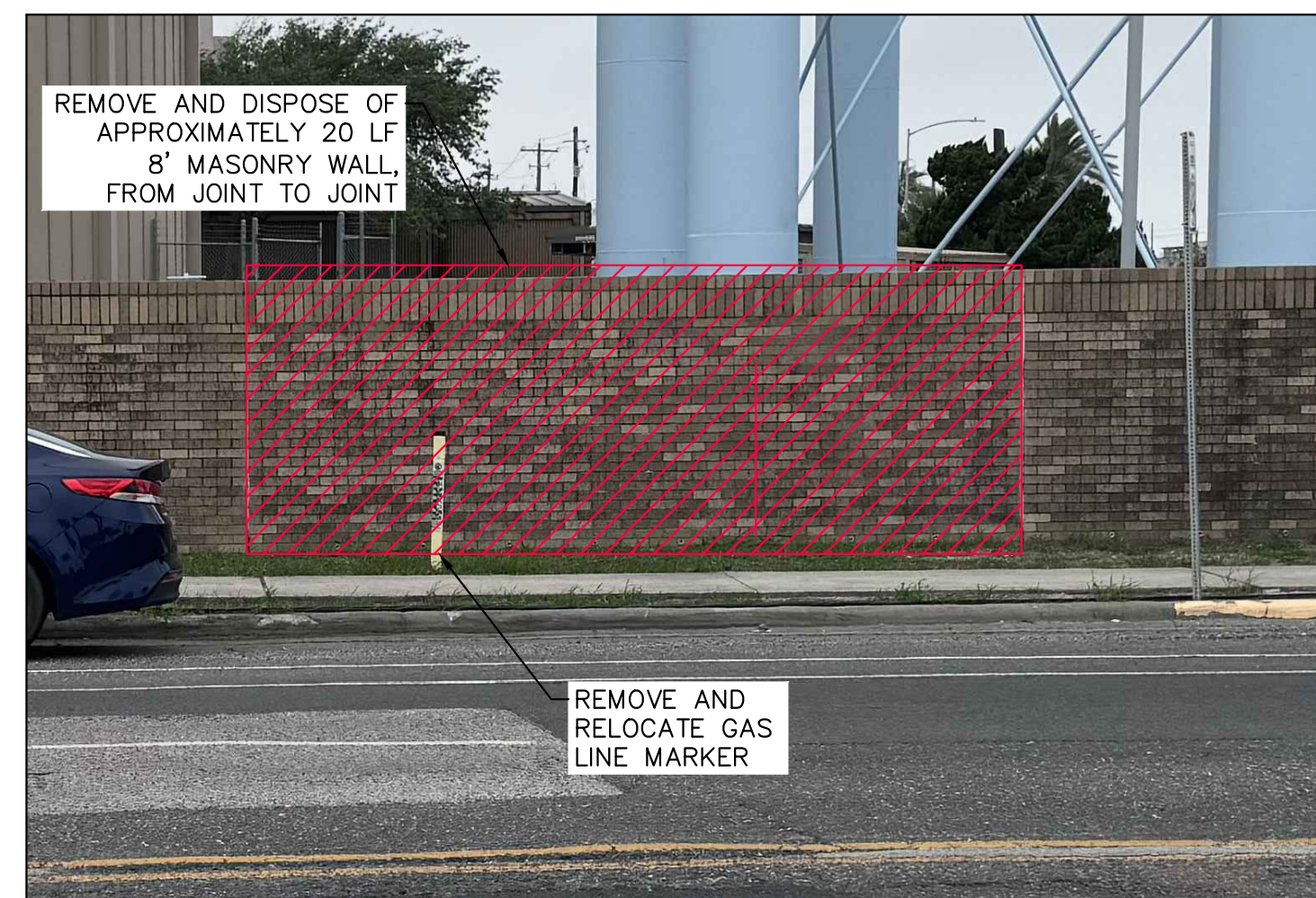
2 WATER QUALITY ANALYZER AND CATHODIC PROTECTION IN PEDESTAL



3 DFS SCADA TOWER



4 EXTERIOR CATHODIC PROTECTION



5 MASONRY FENCE DEMO

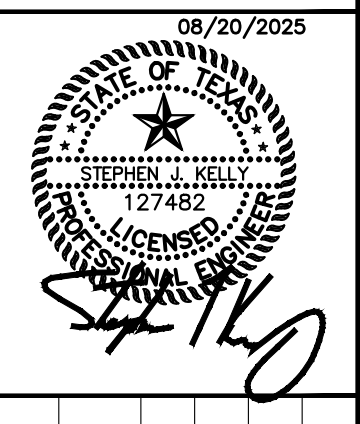
**DEMOLITION NOTES**

1. CONTRACTOR SHALL COORDINATE WITH THE CITY OF GALVESTON A MINIMUM 72 HOURS PRIOR TO DEMOLITION. THE CITY OF GALVESTON SHALL HAVE FIRST RIGHT OF REFUSAL FOR ANY EXISTING EQUIPMENT. COORDINATE WITH CITY OF GALVESTON PUBLIC WORKS MINIMUM 1 WEEK PRIOR TO DISPOSAL OF EQUIPMENT.
2. CONTRACTOR TO PROTECT ALL EXISTING INFRASTRUCTURE. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGES AND SHALL REPLACE DAMAGED PROPERTY INCLUDING STRUCTURES AND LANDSCAPING AT NO COST TO THE CITY OF GALVESTON. ELECTRICAL SERVICE TO EXISTING TRANSFORMER MUST BE MAINTAINED THROUGHOUT THE DURATION OF CONSTRUCTION. NO SEPARATE PAY ITEM.
3. CONTRACTOR TO PROVIDE AND MAINTAIN TEMPORARY SECURITY FENCING AROUND SITE, THROUGHOUT THE DURATION OF CONSTRUCTION. TEMPORARY SECURITY FENCING SHALL BE 8' HEIGHT MIN., 12' OR 15' WIDTH CHAIN-LINK PANELS WITH WEIGHTED BASES, AND PRIVACY SCREEN. TEMPORARY SECURITY GATES MAY BE PLACED AT DRIVEWAY ENTRANCES. GATES MUST REMAIN LOCKED DURING NON-WORKING TIMES. A SEPARATE LOCK SPECIFICALLY FOR CITY OF GALVESTON USE SHALL BE DAISYCHAINED TO FACILITATE UNRESTRICTED CITY OF GALVESTON ACCESS DURING NON-WORKING TIMES.
4. CONTRACTOR TO FIELD LOCATE ALL EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION.
5. ALL MACHINERY AND EQUIPMENT MUST REMAIN WITHIN THE EXISTING ELEVATED STORAGE TANK SITE AND PROPOSED LIMITS OF CONSTRUCTION. ANY DAMAGE TO ADJACENT PROPERTIES SHALL BE REPAIRED TO THE SATISFACTION OF THE OWNER OF SAID PROPERTY. NO SEPARATION PAY ITEM.

NO.	REVISIONS	DATE	BY

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KHA PROJECT	067785106
DATE	AUGUST 2025
SCALE AS SHOWN	SCALE AS SHOWN
DESIGNED BY:	VGB
DRAWN BY:	VGB
CHECKED BY:	SKK

**CITY OF GALVESTON  
UTMB EST  
REHABILITATION**

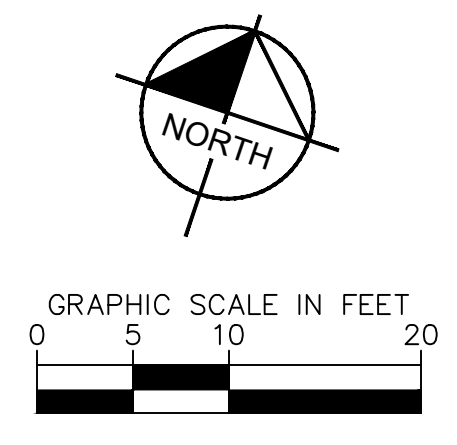
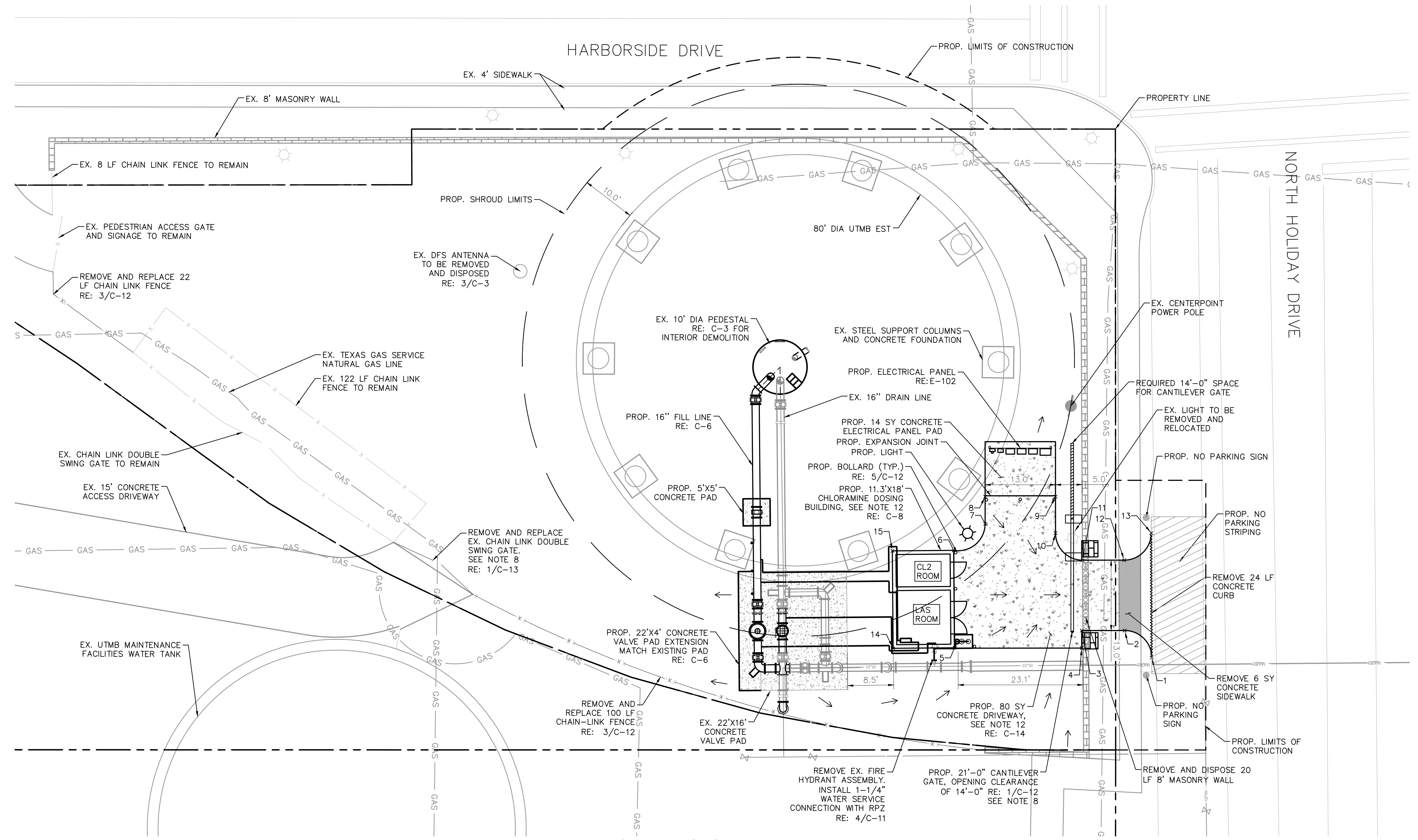
**DEMOLITION PLAN**

SHEET NUMBER  
**C-3**



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**LEGEND**  
 → PROP. GRADING SLOPE ARROW

POINT TABLE			
POINT #	NORTHING	EASTING	DESCRIPTION
1	13685991.18	3315166.71	DRIVEWAY PC
2	13685994.29	3315160.38	DRIVEWAY PT
3	13685991.74	3315152.86	DRIVEWAY CORNER
4	13685988.66	3315153.90	DRIVEWAY CORNER
5	13685981.18	3315131.62	DRIVEWAY CORNER
6	13685998.19	3315125.70	DRIVEWAY CORNER/PC
7	13686004.69	3315129.63	DRIVEWAY PT
8	13686009.43	3315128.02	DRIVEWAY CORNER

POINT TABLE			
POINT #	NORTHING	EASTING	DESCRIPTION
9	13686013.61	3315140.33	DRIVEWAY CORNER
10	13686007.23	3315142.50	DRIVEWAY PC
11	13686004.10	3315148.84	DRIVEWAY PT
12	13686006.57	3315156.12	DRIVEWAY PC
13	13686012.93	3315159.25	DRIVEWAY PT
14	13685977.45	3315120.92	BUILDING CORNER
15	13685994.45	3315115.00	BUILDING CORNER

**SITE PLAN NOTES**

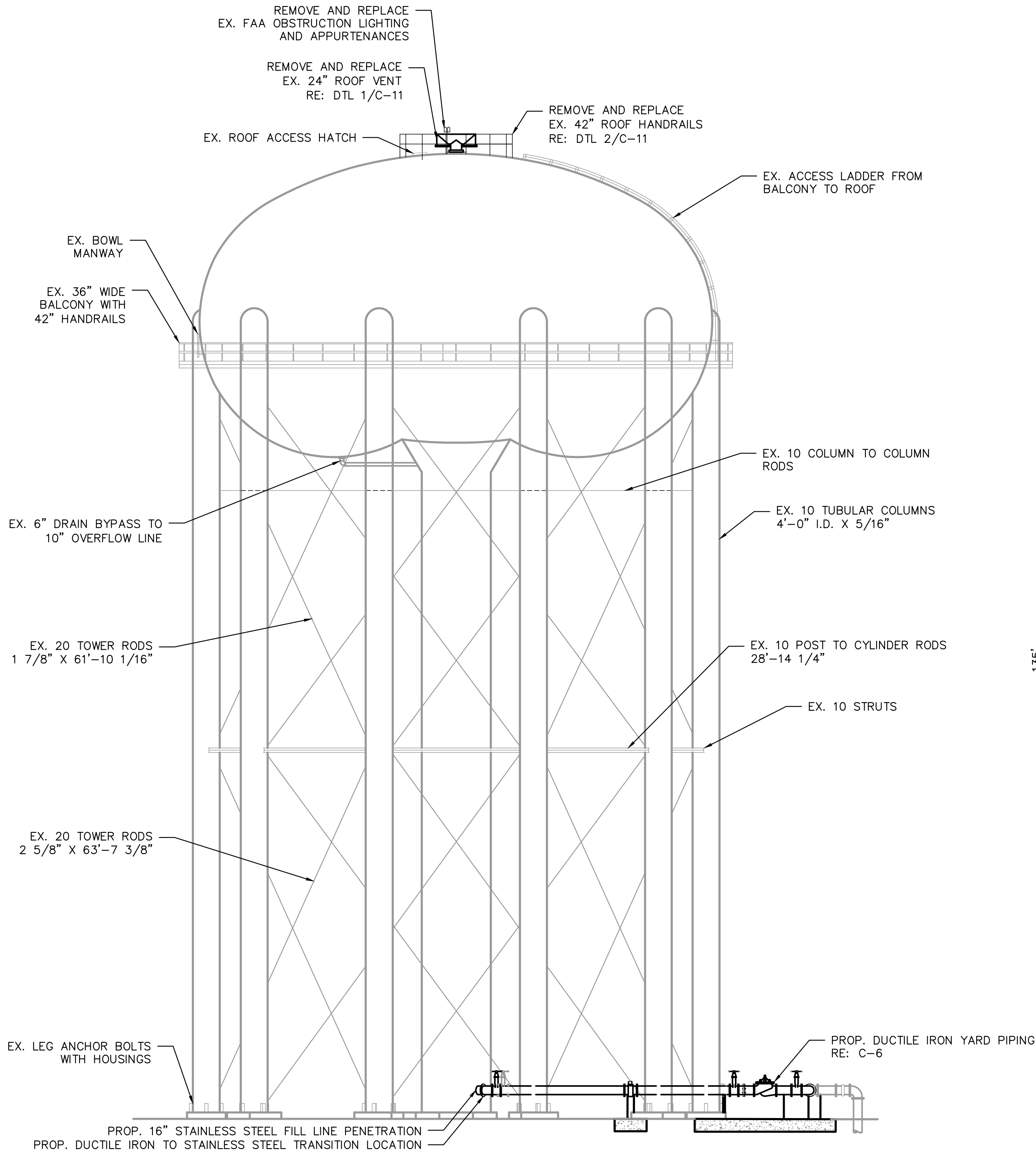
- ALL MECHANICAL JOINTS SHALL HAVE MEGA LUG THRUST RESTRAINTS OR APPROVED EQUAL.
- THE CONTRACTOR SHALL MAINTAIN ADEQUATE DRAINAGE AT ALL TIMES AND PROVIDE AND MAINTAIN EROSION PROTECTION IN AND ADJACENT TO THE CONSTRUCTION LIMITS.
- CITY HAS FIRST RIGHT OF REFUSAL OF REMOVED EQUIPMENT.
- ALL STRUCTURES SHALL HAVE 6" CLEARANCE BETWEEN TOP OF SLAB AND PROPOSED FINISHED GROUND.
- FOR ELECTRICAL WORK REFER TO ELECTRICAL SHEETS.
- ALL PAVING DIMENSIONS AND COORDINATES ARE TO THE EDGE OF CONCRETE.
- WHERE IN CONFLICT WITH PROPOSED DRIVEWAY, CONTRACTOR SHALL REMOVE MASONRY WALL PER DETAIL 5/C-3.
- CONTRACTOR SHALL INCLUDE IDENTIFICATION SIGNS WITH ELEVATED STORAGE TANK NUMBER AND EMERGENCY CONTACT INFORMATION. MATCH SIGN SIZE, STYLE, AND TEXT FROM PEDESTRIAN GATE. REPLACE EXISTING "NO PARKING AT ANY TIME" AND "DO NOT BLOCK DRIVE" SIGNAGE ON GATE IN-KIND. SUBMIT SHOP DRAWING FOR REVIEW AND APPROVAL PRIOR TO ORDERING MATERIAL.
- INCLUDE THE FOLLOWING SIGNS ON ALL ENTRANCE GATES TO SITE:
  - CITY OF GALVESTON EMERGENCY CONTACT
  - CAUTION CHEMICAL STORAGE AREA
  - UNAUTHORIZED ENTRANCE WARNING
- THE VALVE PAD, CHLORAMINE DOSING BUILDING, AND DRIVEWAY DESIGNS ARE BASED ON A PRESUMPTIVE LOAD-BEARING VALUE OF 2,000 PSF FOR CLASS 4 MATERIALS (SAND, SILTY SAND, CLAYEY SAND, SILTY GRAVEL, AND CLAYEY GRAEL) PER IBC TABLE 1806.2. CONTRACTOR TO SUBMIT A SITE SPECIFIC GEOTECHNICAL REPORT FROM THAT IS SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS WHICH CONFIRMS THAT THE EXISTING SOILS MATCH THE ASSUMED MATERIALS CLASS AND PRESUMPTIVE LOAD-BEARING PRESSURE WITHOUT SUBGRADE PREPARATION. IF THE GEOTECHNICAL ENGINEER RECOMMENDS SUBGRADE PREPARATION TO OBTAIN THE ASSUMED BEARING VALUES, THE CONTRACTOR IS TO PROVIDE SUBGRADE PREPARATION AS RECOMMENDED.
- CONTRACTOR TO REPLACE 3-STRAIN SECURITY BARBED WIRE AS NEEDED PER CITY'S SPECIFICATIONS.
- CONCRETE DRIVEWAY SHALL BE INSTALLED GRADE TO DRAIN TOWARDS APRON AND STREET. CONTRACTOR SHALL USE A MINIMUM 2% MAX CROSS-SLOPE AND 2% MAX LONGITUDINAL SLOPE PER CITY OF GALVESTON DRIVEWAY DETAIL AS NECESSARY TO ACHIEVE GRADE. SET FINISHED FLOOR OF CMU BUILDING A MINIMUM OF 3-INCHES ABOVE DRIVEWAY TO PREVENT WATER INTRUSION.
- PIPE MATERIAL SHALL BE DUCTILE IRON
- ENTIRE PROPOSED WATERLINE WITHIN EST SITE SHALL BE FULLY RESTRAINED IN ACCORDANCE WITH CITY OF GALVESTON STANDARD SPECIFICATION.



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<b>CITY OF GALVESTON                  UTMB EST                  REHABILITATION</b>							
<b>SITE PLAN</b>							
SHEET NUMBER <b>C-4</b>							

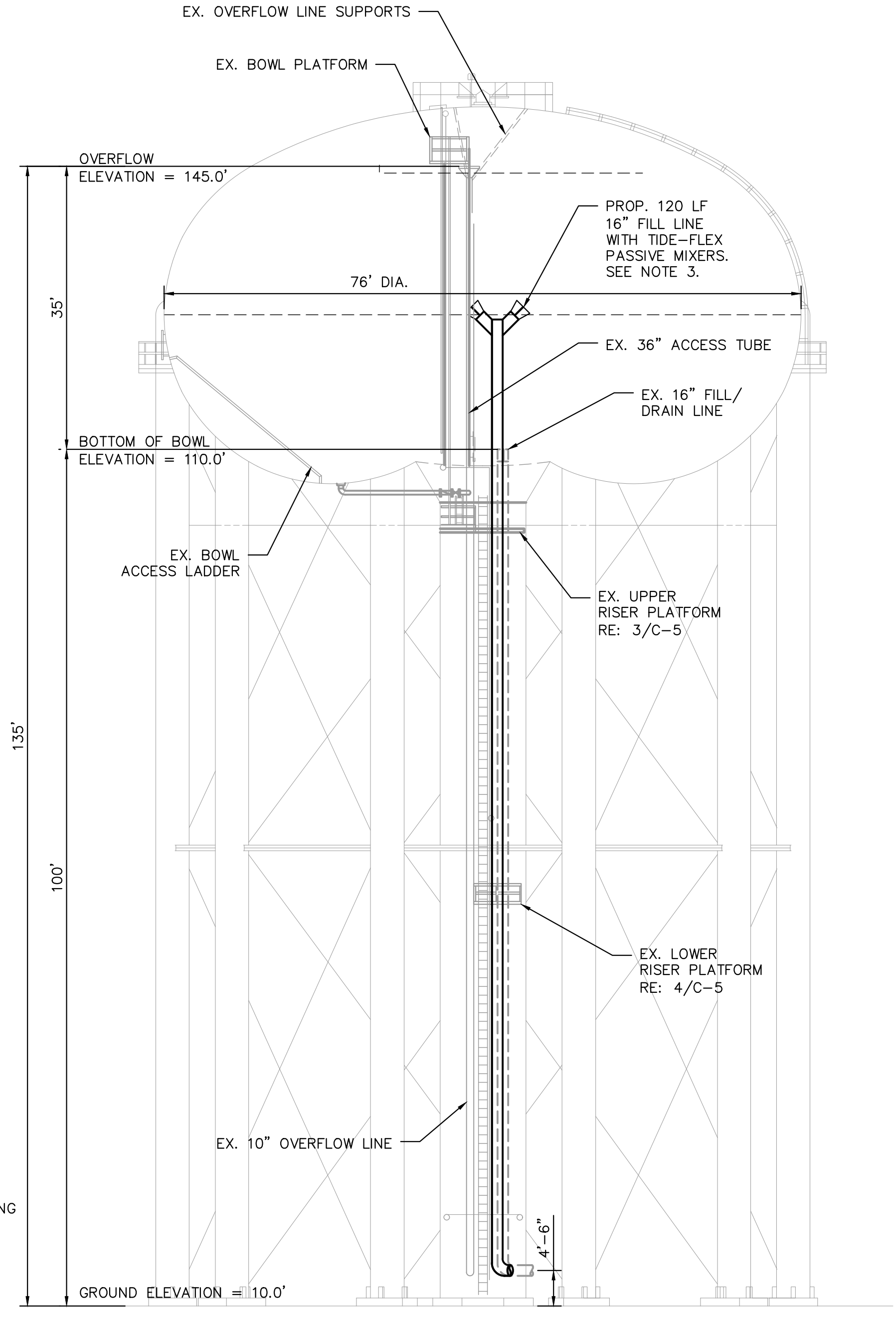
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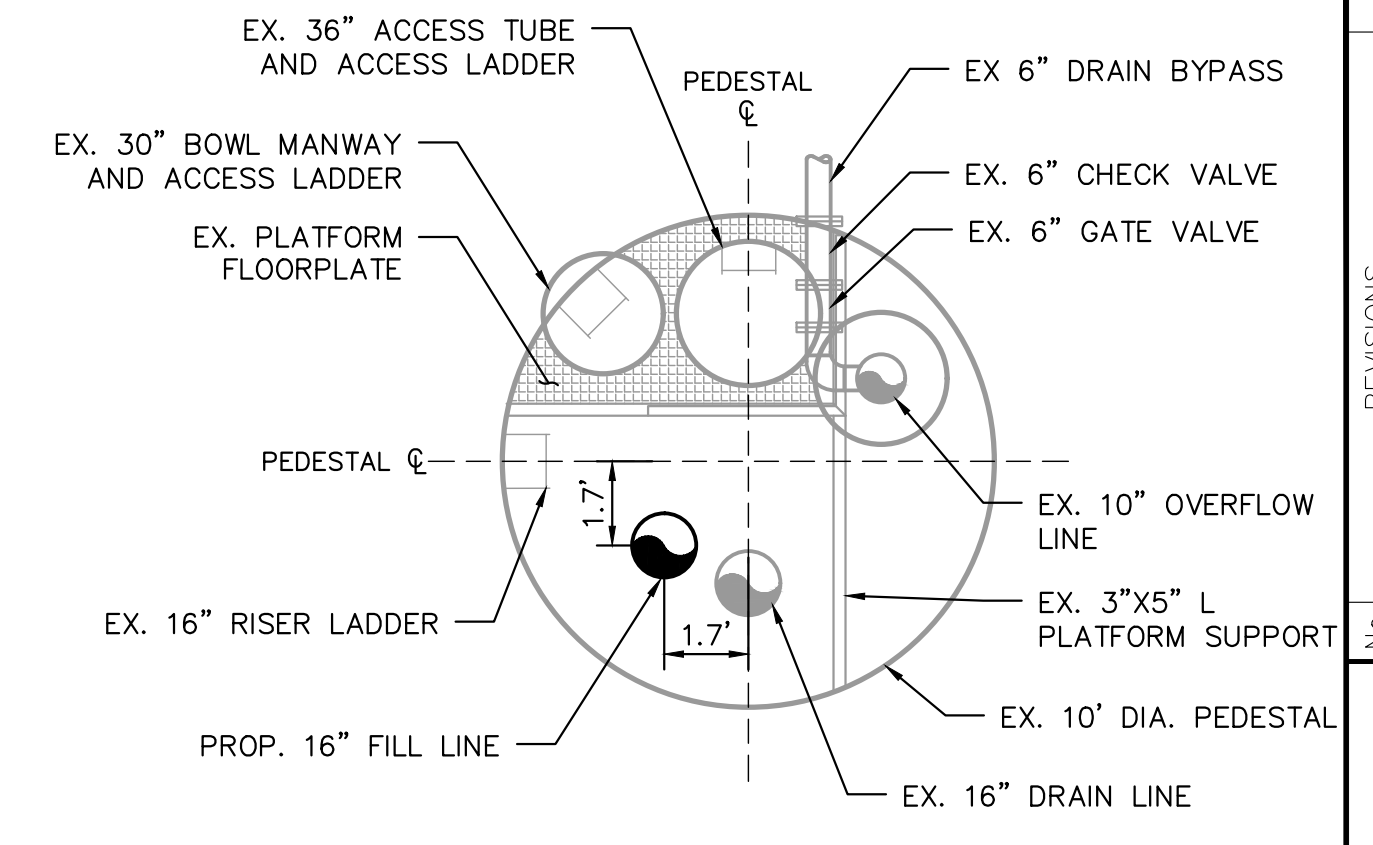
**1 EST EXTERIOR ELEVATION VIEW**  
SCALE: NOT TO SCALE

- GENERAL NOTES:**
- ALL APPURTENANCES NOT CALLED OUT AS PROPOSED OR TO BE REPLACED SHALL REMAIN. DAMAGE TO THESE APPURTENANCES SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE OWNER AT NO SEPARATE PAY.
  - THE DEPICTED ORIENTATION OF TANK APPURTENANCES IS NOT EXACT. REFER TO DETAILS ON THIS SHEETS FOR EXISTING TANK PLAN VIEWS
  - ABRASIVE BLASTING MUST BE PERFORMED IN ACCORDANCE WITH TCEQ, LOCAL, STATE, AND FEDERAL REGULATIONS.
  - WELDING REPAIRS MAY BE REQUIRED DUE TO ABRASIVE BLASTING. CONTRACTOR IS TO PERFORM A POST BLAST INSPECTION, REMOVE AND REPLACE OR REPAIR DAMAGED STEEL CABLE BRACING.
  - ANY CORROSION DAMAGE, STRUCTURAL DAMAGE, PITTING OR HOLES SHALL BE REPAIRED PER TECHNICAL SPECIFICATION 08999.
  - SEE TECHNICAL SPECIFICATION 09871 FOR STEEL TANK COATING REQUIREMENTS.

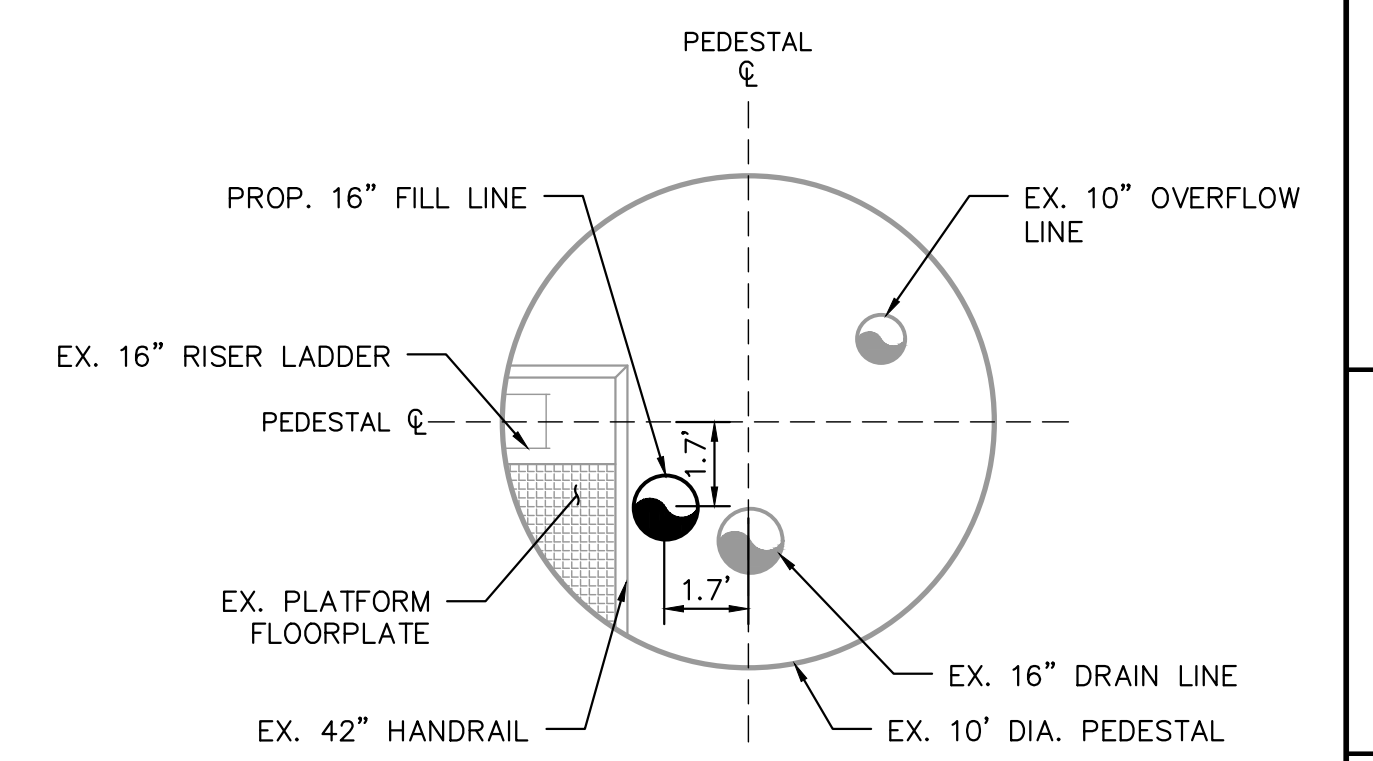


**2 EST INTERIOR SECTION VIEW**  
SCALE: NOT TO SCALE

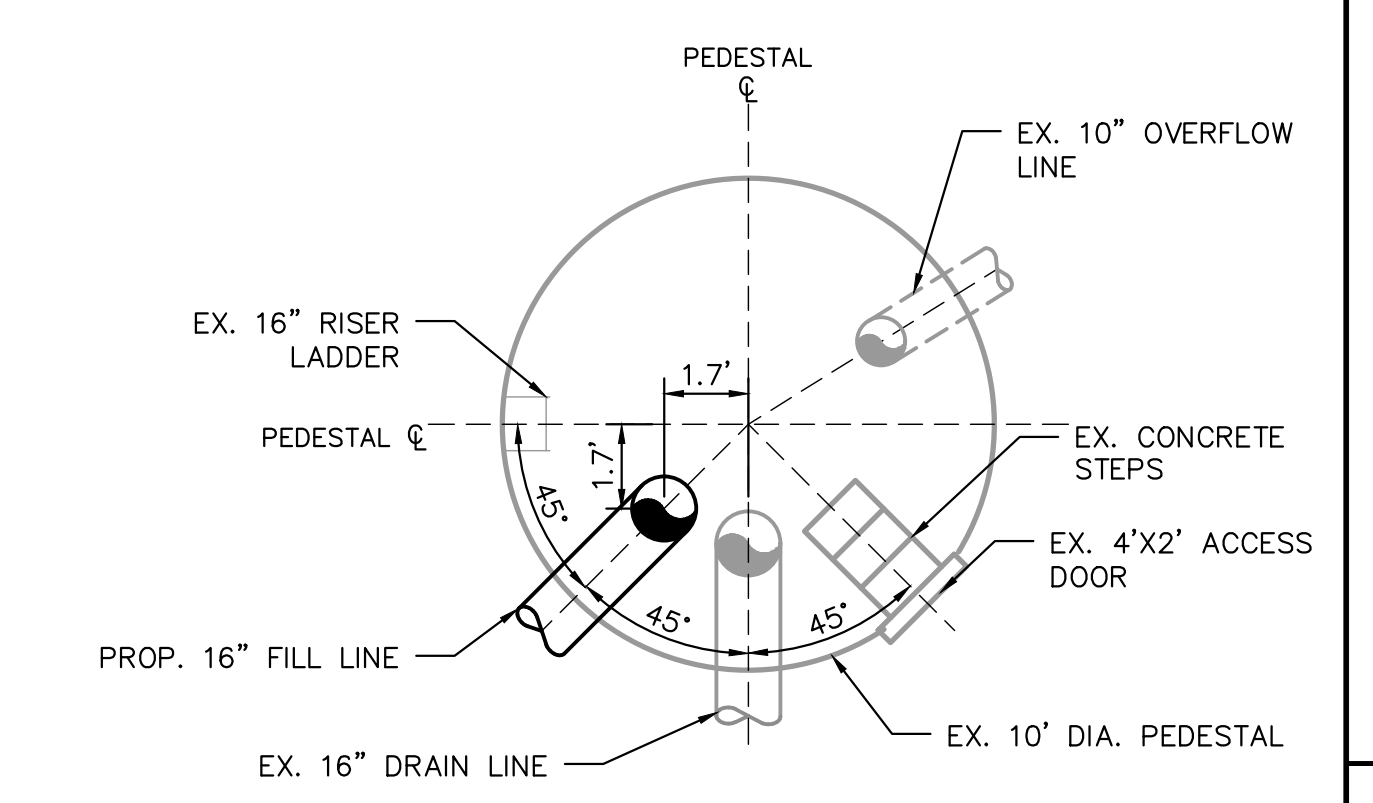
- GENERAL NOTES:**
- THE DEPICTED ORIENTATION OF TANK APPURTENANCES IS NOT EXACT. REFER TO DETAILS ON THIS SHEETS FOR EXISTING TANK PLAN VIEWS
  - SEE TECHNICAL SPECIFICATION 09871 FOR STEEL TANK COATING REQUIREMENTS.
  - FOUR (4) TIDE-FLEX PASSIVE MIXERS TO BE INSTALLED 16.8 FT BELOW OVERFLOW ELEVATION.
  - CONTRACTOR TO PROVIDE HANGERS, BRACKETS, AND THRUST RESTRAINTS AS REQUIRED FOR PROPOSED FILL LINE. CONTRACTOR TO SUBMIT SHOP DRAWINGS SIGNED AND SEALED BY A ENGINEER LICENSES IN THE STATE OF TEXAS. NO SEPARATE PAY ITEM.
  - CONTRACTOR TO INSTALL ISOLATION KITS BETWEEN ALL DISSIMILAR METALS, NO SEPARATE PAY ITEM.



**3 UPPER PLATFORM PLAN VIEW**  
SCALE: NOT TO SCALE



**4 LOWER PLATFORM PLAN VIEW**  
SCALE: NOT TO SCALE



**5 PEDESTAL INTERIOR PLAN VIEW**  
SCALE: NOT TO SCALE

- NOTES:**
- DETAILS 3, 4, AND 5 ARE INTENDED TO BE SCHEMATIC IN NATURE TO INFORM THE CONTRACTOR OF THE APPURTENANCES AND LAYOUT OF THE EST AT VARIOUS LEVELS AND ARE BASED ON AVAILABLE RECORD INFORMATION ONLY. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND MATERIAL FITMENT PRIOR TO ORDERING MATERIAL AND INSTALLATION. RE-WORK REQUIRED TO ACHIEVE FINAL FITMENT SHALL BE PERFORMED BY THE CONTRACTOR AT NO SEPARATE PAY.

NO.	REVISIONS	DATE	BY

**Kimley-Horn**

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08/20/2025

STATE OF TEXAS  
 ENGINEER  
 STEPHEN J. KELLY  
 127482

KHA PROJECT	067785106
DATE	AUGUST 2025
SCALE AS SHOWN	SCALE AS SHOWN
DESIGNED BY:	VGB
DRAWN BY:	VGB
CHECKED BY:	SJK

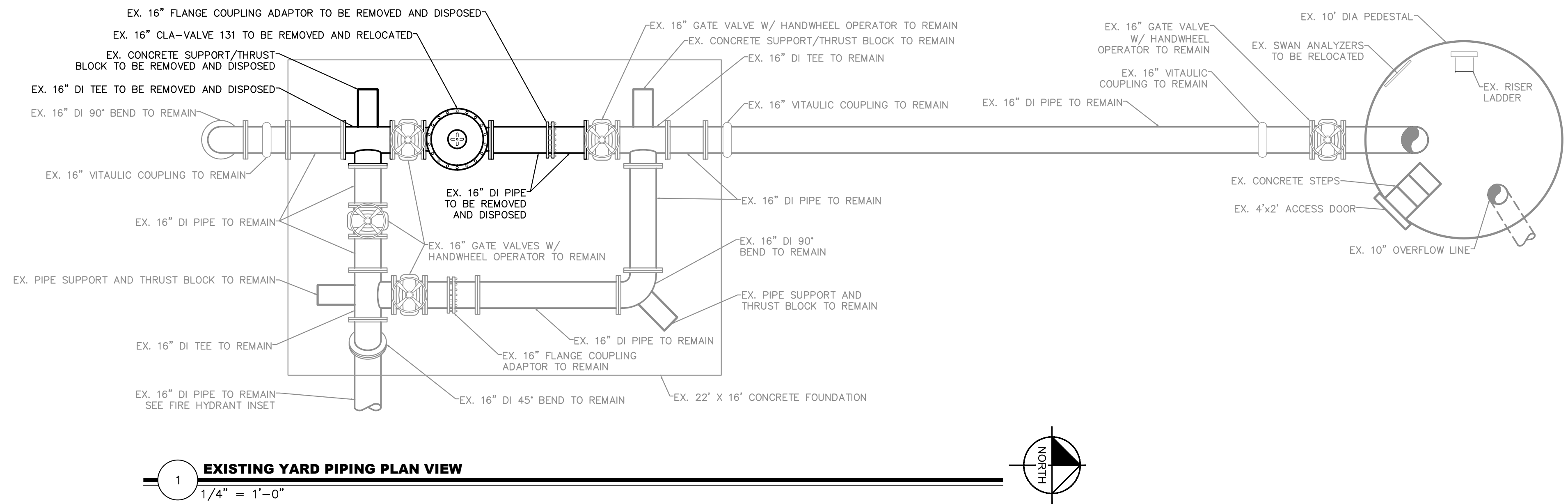
**CITY OF GALVESTON  
 UTMB EST  
 REHABILITATION**

**TANK SECTION**

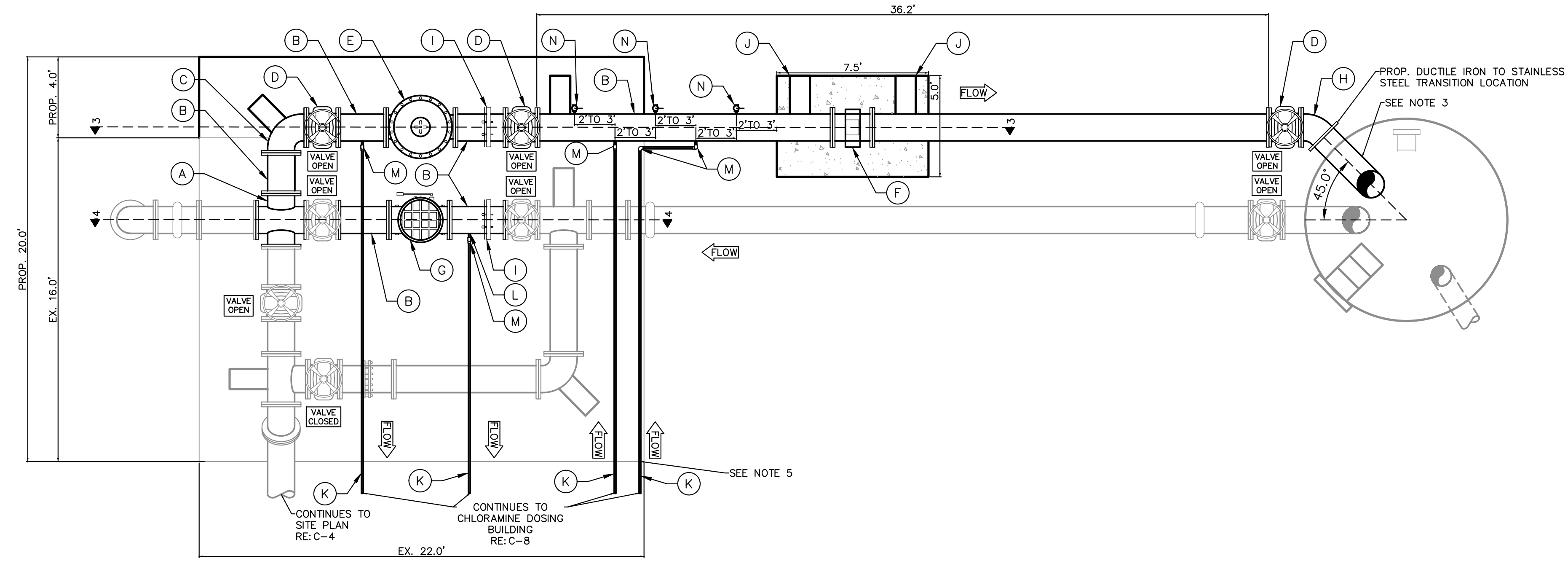
SHEET NUMBER  
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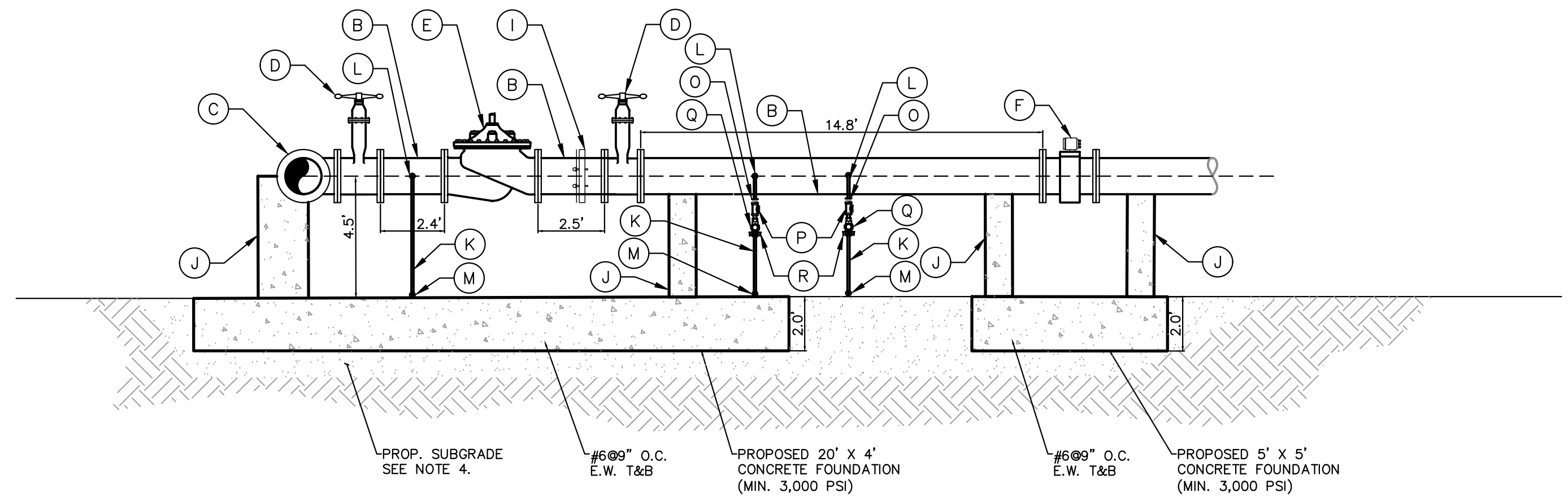
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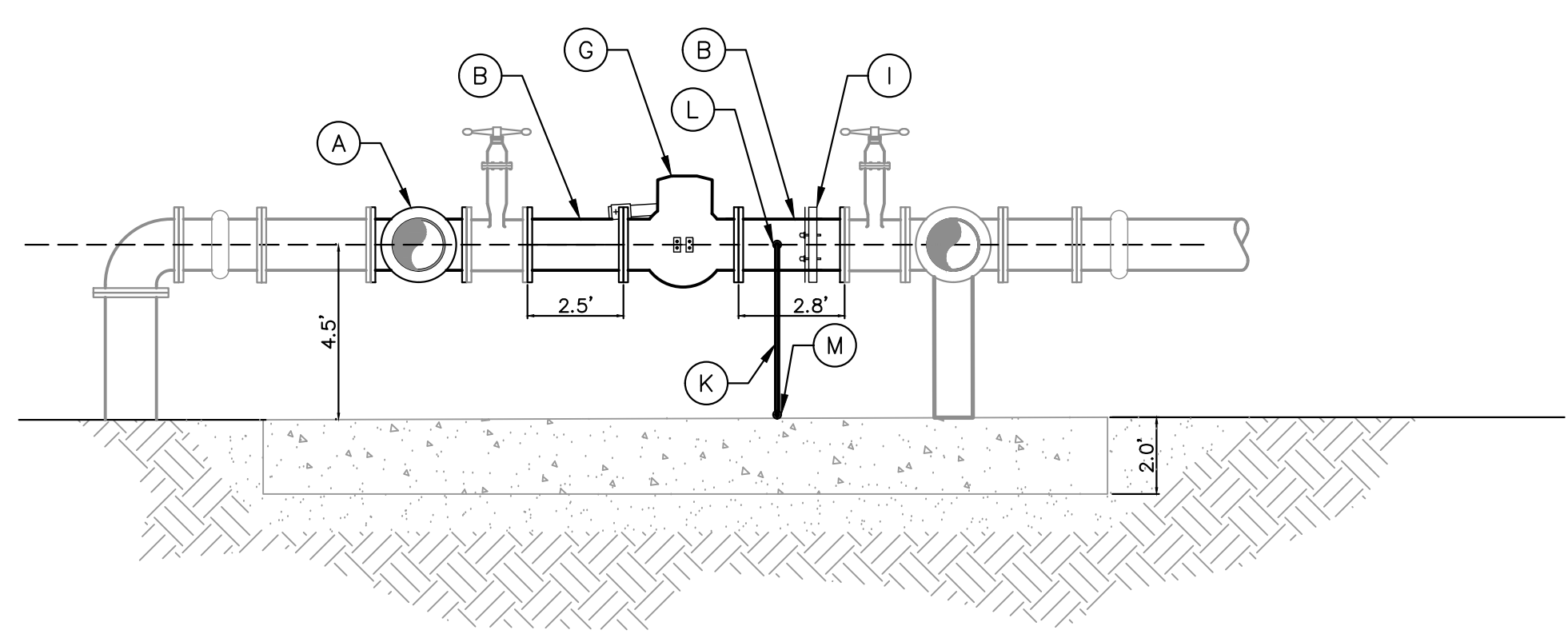
**1 EXISTING YARD PIPING PLAN VIEW**  
 1/4" = 1'-0"



**2 PROPOSED YARD PIPING PLAN VIEW**  
 1/4" = 1'-0"



**3 TANK FILL LINE PROFILE SECTION VIEW**  
 1/4" = 1'-0"



**4 EST DRAIN LINE PROFILE SECTION VIEW**  
 1/4" = 1'-0"

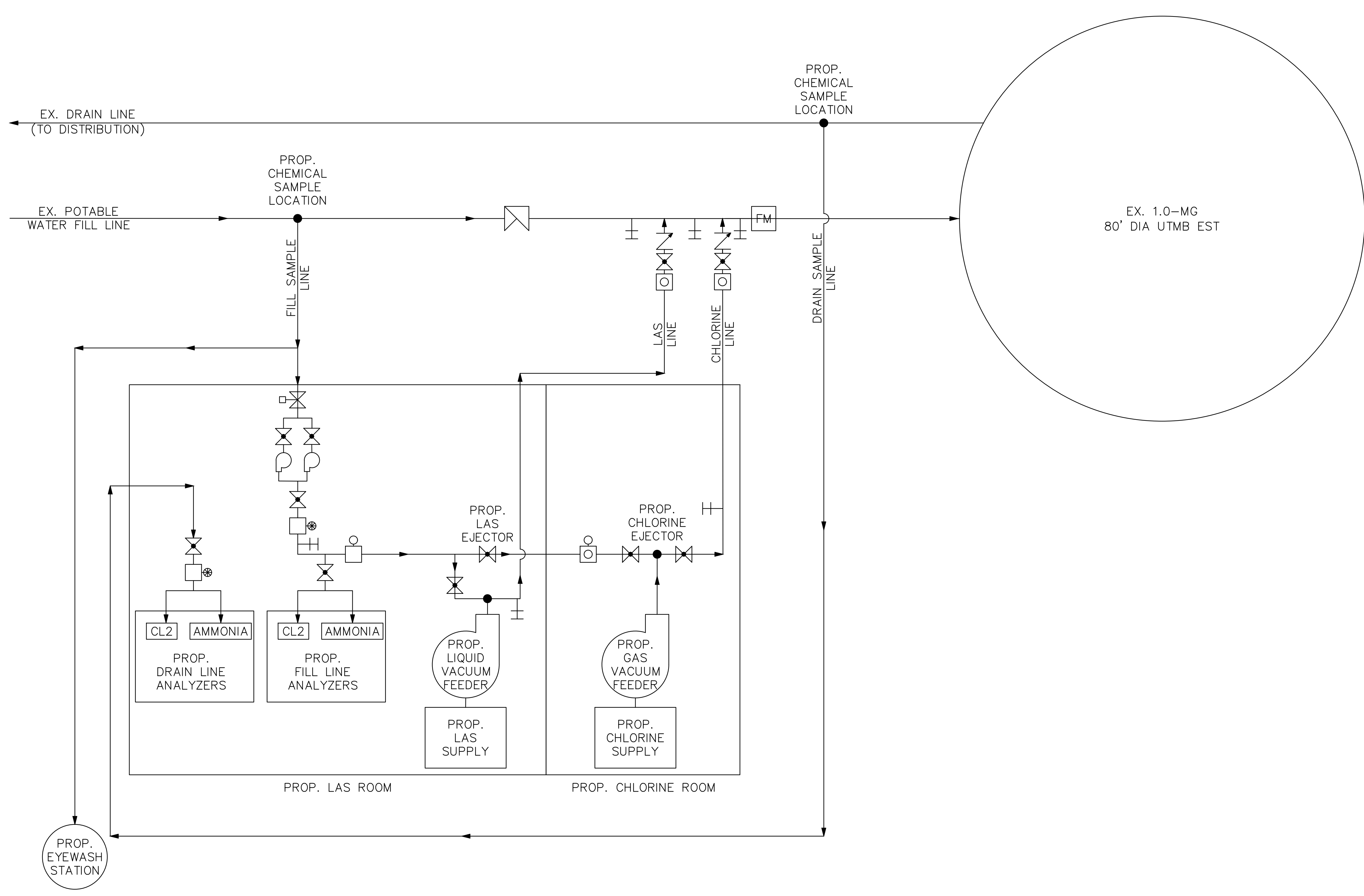
PROPOSED EQUIPMENT/FITTINGS LIST			
MARK	DESCRIPTION	QUANTITY	UNIT
A	16" DI TEE (FLGXFLG)	1	EA
B	16" DI PIPE (FLGXFLG)		
C	16" DI 90° BEND (FLGXFLG)	1	EA
D	16" GATE VALVE (FLGXFLG)	3	EA
E	16" CLA-VALVE 131 (RELOCATED)	1	EA
F	16" MAG-METER (FLGXFLG) SPEC 02685 OR 13420	1	EA
G	16" CHECK VALVE (FLGXFLG)	1	EA
H	16" DI 45° BEND (FLGXFLG)	1	EA
I	16" DISMANTLING JOINT (ROMAC DJ400 OR APPROVED EQUAL)	2	EA
J	CONCRETE SUPPORT/THRUST BLOCK	4	EA
K	1" PVC PIPE (PEXPE)		
L	1" PVC PIPE CONNECTION	4	EA
M	1" PVC 90° BEND (SOLVENT WELD)	4	EA
N	1" SAMPLE TAP	3	EA
O	1" CHECK VALVE	2	EA
P	1" BALL VALVE	2	EA
Q	1" CORPORATION STOP	2	EA
R	1" NPT OR MUELLER PIPE THREAD	2	EA

- NOTES:**
- EXISTING CLA-VALVE 131 TO BE MAINTAINED AND RELOCATED AS SHOWN ON PLANS.
  - PROPOSED CONCRETE SLAB SHALL TIE INTO THE EXISTING SLAB WITH DOWELS. SEE C-14.
  - THE CONTRACTOR SHALL DESIGN THE PROP. 16" DI PIPE CONNECTION INTO THE PEDESTAL, THE PIPE SUPPORTS UP THE WALL, AND THE PENETRATION THROUGH THE BOTTOM OF THE BOWL. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SIGNED AND SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF TEXAS.
  - THE VALVE PAD DESIGN IS BASED ON A PRESUMPTIVE LOAD-BEARING VALUE OF 2,000 PSF FOR CLASS 4 MATERIALS (SAND, SILTY SAND, CLAYEY SAND, SILTY GRAVEL, AND CLAYEY GRAEL) PER IBC TABLE 1806.2. CONTRACTOR TO SUBMIT A SITE SPECIFIC GEOTECHNICAL REPORT FROM THAT IS SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS WHICH CONFIRMS THAT THE EXISTING SOILS MATCH THE ASSUMED MATERIALS CLASS AND PRESUMPTIVE LOAD-BEARING PRESSURE WITHOUT SUBGRADE PREPARATION. IF THE GEOTECHNICAL ENGINEER RECOMMENDS SUBGRADE PREPARATION TO OBTAIN THE ASSUMED BEARING VALUES, THE CONTRACTOR IS TO PROVIDE SUBGRADE PREPARATION AS RECOMMENDED.
  - CONTRACTOR SHALL INSTALL PROP. 1" PVC PIPES FLAT ON THE CONCRETE VALVE PAD AND SHALL INSTALL 1" PVC 90° BENDS TO BEND THE 1" PVC PIPES DOWN UNDERGROUND TO A MIN. OF 2' COVER BETWEEN THE VALVE PAD AND THE CHLORAMINE BUILDING FOOTPRINT. INSTALL 90° BENDS AS NECESSARY TO BRING PROP. 1" PVC PIPES ABOVE GRADE BEFORE PENETRATING THE BUILDING EXTERIOR WALL.

NO.	DATE	BY			
REVISIONS					
STATE OF TEXAS REGISTRATION NO. F-928 11700 KATY FREEMAN SUITE 800 HOUSTON, TX 77079 WWW.KIMLEY-HORN.COM © 2025 KIMLEY-HORN AND ASSOCIATES, INC.					
KHA PROJECT	067785106	DATE	AUGUST 2025	SCALE AS SHOWN	DESIGNED BY: VGB
					DRAWN BY: NMT
					CHECKED BY: SUK
CITY OF GALVESTON UTMB EST REHABILITATION					
YARD PIPING					
SHEET NUMBER					
C-6					

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**LEGEND**

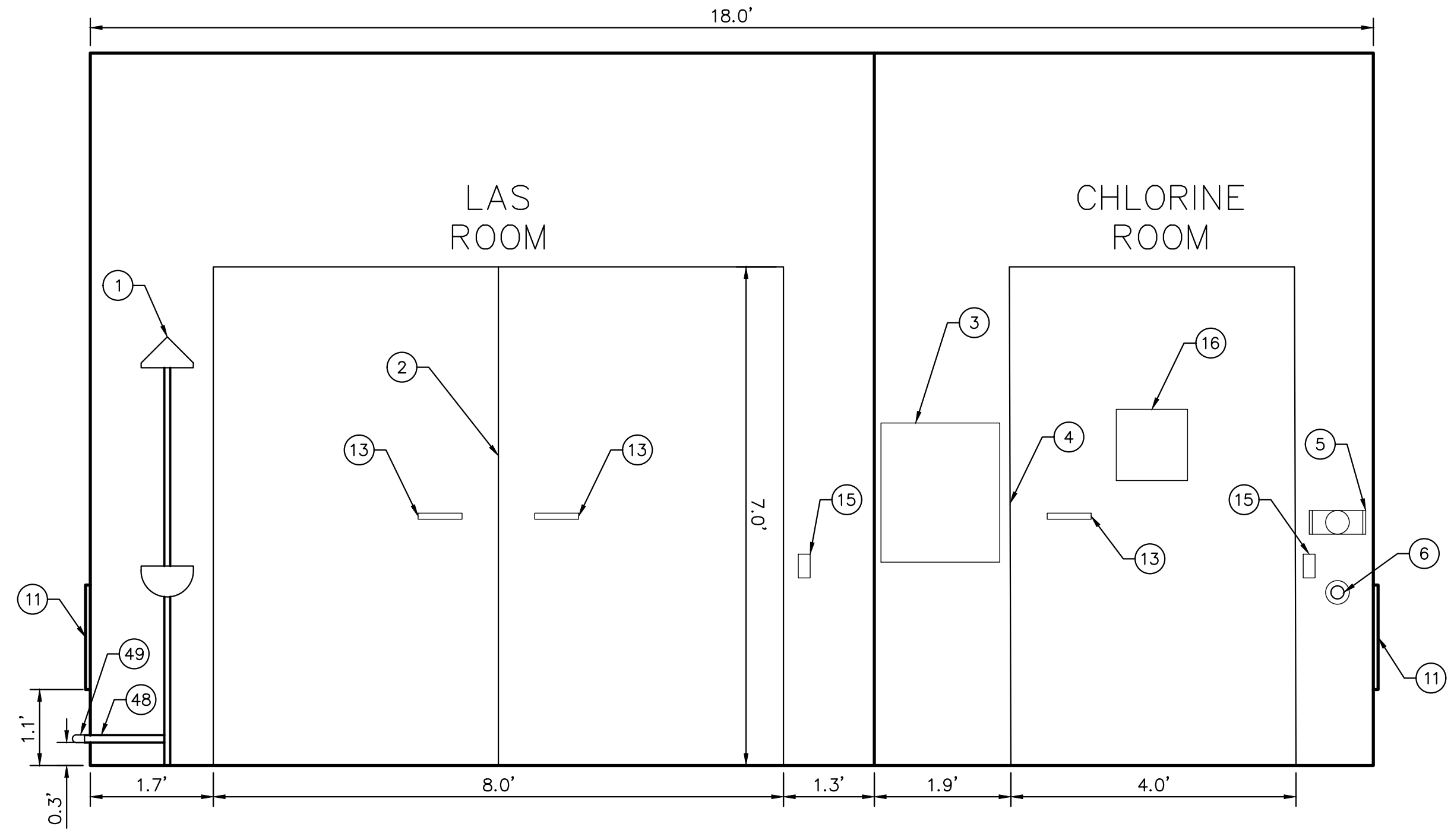
- FLOW DIRECTION
- ⊗ BALL VALVE
- ∩ CHECK VALVE
- ⊠ SOLENOID VALVE
- ⊞ CLA-VALVE
- FM FLOW METER
- ⊕ PUMP
- ⊥ SAMPLE PORT
- ⊗ PRESSURE RELEASE VALVE
- ⊞ PRESSURE GAGE
- ⊞ CORPORATION STOP

NOT TO SCALE

KHA PROJECT 067785106		STATE OF TEXAS STEPHEN J. KELLY 127482 <i>[Signature]</i>	
DATE AUGUST 2025	DESIGNED BY: VGB	08/20/2025	
SCALE AS SHOWN	DRAWN BY: NMT	11700 KATY FREEMAN SUITE 800 HOUSTON, TX 77079 WWW.KIMLEY-HORN.COM © 2025 KIMLEY-HORN AND ASSOCIATES, INC.	
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PROCESS FLOW DIAGRAM		No.	BY
SHEET NUMBER C-7			

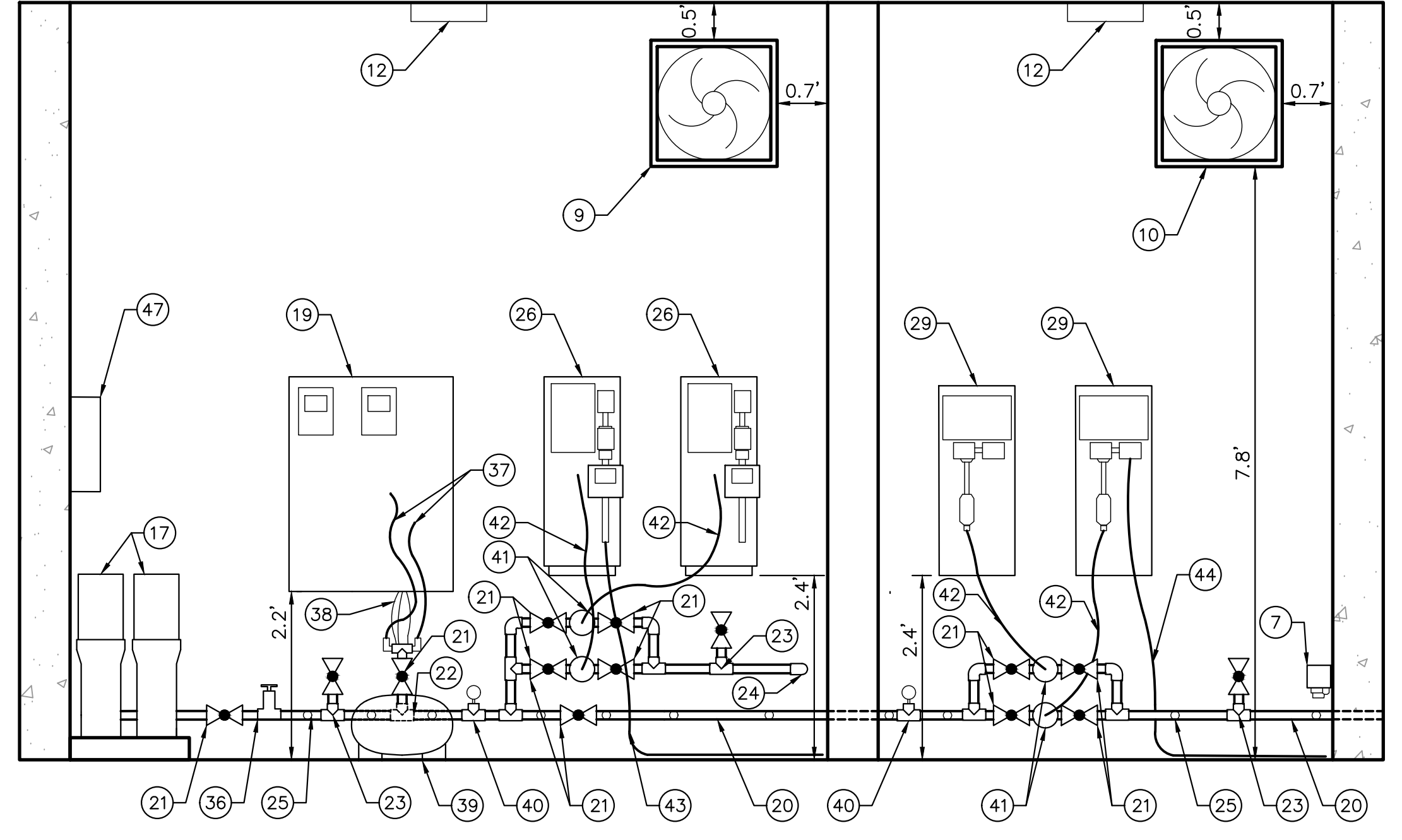
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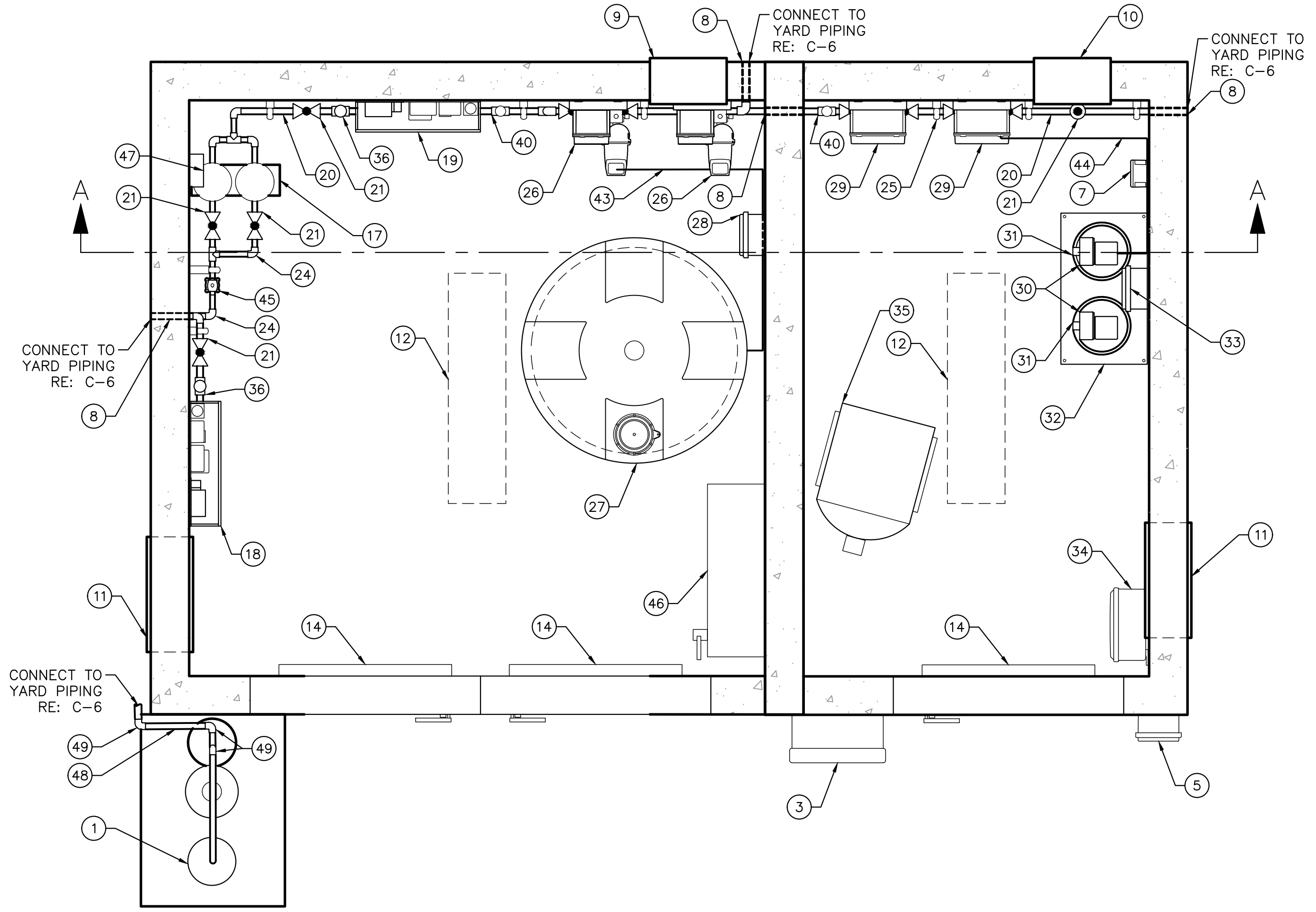
**CHLORAMINE DOSING BUILDING - EXTERIOR SECTION VIEW**

1  
5/8" = 1'



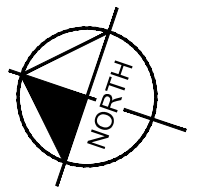
**CHLORAMINE DOSING BUILDING - WEST WALL A-A SECTION VIEW**

3  
5/8" = 1'



**CHLORAMINE DOSING BUILDING PLAN VIEW**

2  
5/8" = 1'



**MATERIALS LIST**

1. EMERGENCY SHOWER AND EYEWASH STATION (RE: 6/C-11)
2. (2) 4' X 7' DOORS, 1-3/4" THICKNESS, PULTRUDED FIBERGLASS, GRAY FINISH
3. SCBA CABINET WITH 30 MIN. SCBA
4. 4' X 7' DOOR, 1-3/4" THICKNESS, PULTRUDED FIBERGLASS, GRAY FINISH
5. LEAK SENSOR CONTROLLER
6. REMOTE PANIC BUTTON, JCS RPB001
7. LEAK SENSOR, JCS 4500 D-CL DUAL CHANNEL
8. 2" SCH. 80 WALL PENETRATION SLEEVE TO EXTEND 6" THROUGH WALL. CAP UNUSED PENETRATIONS. FOAM SEAL ANNULAR SPACE BETWEEN CONDUIT AND SLEEVE.
9. 12" EXHAUST FAN WITH HOOD, 2" FILTER, AND METAL GRATE
10. 12" INTAKE FAN WITH HOOD, 2" FILTER, AND METAL GRATE
11. 24"x24" FIBERGLASS LOUVER, SILL HEIGHT 16" ABOVE FINISHED FLOOR
12. 4'x1' LED STRIP LIGHT (RE: E-111)
13. SS LEVER LOCK (KEYED TO CITY STD)
14. EMERGENCY EGRESS PUSH BAR
15. EXTERIOR FAN/LIGHT SWITCH
16. CLEAR, GAS-TIGHT INSPECTION WINDOW PER TAC 217.278(b)(2)
17. DUPLEX BOOSTER PUMPS, FPS 1VR-11-00STG-1.5HP VERTICAL MULTI-STAGE
18. CHEMICAL ANALYZERS RELOCATED FROM EST PEDESTAL
19. ANALYZER PANEL WITH AMMONIUM ANALYZER AND FREE AVAILABLE CHLORINE AND TOTAL CHLORINE ANALYZER
20. 1" SCH. 80 PVC WATER LINE
21. 1" BALL VALVE
22. 1" SCH. 80 PVC TEE
23. 1" SAMPLE TAP ASSEMBLY
24. 1" SCH. 80 PVC 90° BEND
25. PVC PIPE TO BE BRACKETED TO WALL EVERY 24" (MAX.) AND AT EACH PIPE JOINT WITH GALVANIZED OR STAINLESS STEEL BRACKET
26. LAS LIQUID VACUUM FEEDER, JCS MODEL 4100
27. 250 GALLON DOUBLE WALL LAS TANK
28. LAS LEVEL INDICATOR CONTROLLER, JCS MODEL 4600-L AND ANALOG LEVEL GAUGE
29. AUTOMATIC CHLORINATOR, JCS MRMT 0-100
30. 150 LB CHLORINE TANK
31. VACUUM REGULATOR, JCS MODEL 420-VCR-CL
32. DUAL CYLINDER SCALE, JCS MODEL 4700
33. EMERGENCY SHUT OFF VALVE, JCS MODEL RC150
34. SHUT OFF VALVE CONTROLLER
35. SPACE HEATER. TPI H1H5505T 5Kw 240V 1PH OR EQUIVALENT
36. 1" PRESSURE RELEASE VALVE SET TO 260 PSI.
37. CHEMICAL ANALYZER 1/2" SAMPLE TUBING
38. CHEMICAL ANALYZER 1/2" DRAIN LINE TUBING
39. 5 GALLON COLLECTION TANK
40. 1" PRESSURE GAGE
41. 1" VACUUM EJECTORS, JCS 420-INJ-12, 484X
42. 1/2" SCH. 80 CHEMICAL INJECTION LINE
43. 1/2" SCH. 80 LAS FEEDER LINE
44. 1/2" SCH. 80 CHLORINE FEED LINE
45. 1" SOLENOID VALVE
46. RELOCATED SCADA PANEL FROM EST PEDESTAL
47. HEAVY DUTY PUMP SAFETY SWITCH
48. 1-1/4" SCH. 80 PVC PIPE
49. 1-1/4" SCH. 80 PVC 90° BEND

**CHEMICAL BUILDING NOTES**

1. CONTRACTOR SHALL COORDINATE PENETRATION LOCATIONS ON PROPOSED DISINFECTION BUILDING WITH MANUFACTURER TO ALLOW FOR PROPOSED CHEMICAL AND WIRING CONNECTIONS.
2. CONTRACTOR SHALL DETERMINE AND PROVIDE ANY SLAB PENETRATIONS NECESSARY FOR ELECTRICAL WIRING PRIOR TO SLAB CONSTRUCTION.
3. ALL PVC PIPING, FITTINGS, VALVES, AND APPURTENANCES SHALL BE SCHEDULE 80 WITH SOLVENT WELDED JOINT AND FITTINGS. ALL MATERIALS SHALL BE NSF 61 AND NSF 372 APPROVED.
4. CONTRACTOR SHALL COORDINATE WITH BUILDING MANUFACTURER FOR APPROVED METHODS OF CONNECTING EQUIPMENT AND PANELS TO BUILDING WALLS.
5. ALL FLOOR FINISHES FOR THE CHEMICAL BUILDING MUST BE SEALED CONCRETE.
6. MATERIAL FOR CHEMICAL FEEDER PIPES SHALL BE COMPATIBLE WITH THE CHEMICAL BEING DOSED.
7. CONTRACTOR SHALL INSTALL CHEMICAL WARNING SIGNS ON EXTERIOR OF DOOR.
8. PVC PIPE SHALL BE BRACKETED TO WALL EVERY 24" (MAX.) AND AT EACH PIPE JOINT WITH GALVANIZED OR STAINLESS STEEL BRACKET.
9. DOUBLE-WALL TANK SHALL BE IN ACCORDANCE WITH TCEQ DOUBLE-WALL SPILL CONTAINMENT TANK REQUIRED CONDITIONS. ALL PENETRATIONS TO INNER TANK MUST BE THROUGH THE TOP OF THE TANK. NO SIDEWALL PENETRATIONS WILL BE ACCEPTED.

KHA PROJECT 067785106	DATE AUGUST 2025	SCALE AS SHOWN	DESIGNED BY: VGB	DRAWN BY: NMT	CHECKED BY: SUK
<p><b>CITY OF GALVESTON</b>  <b>UTMB EST</b>  <b>REHABILITATION</b></p>					
<p><b>CHLORAMINE DOSING BUILDING (1 OF 2)</b></p>					
SHEET NUMBER <b>C-8</b>					

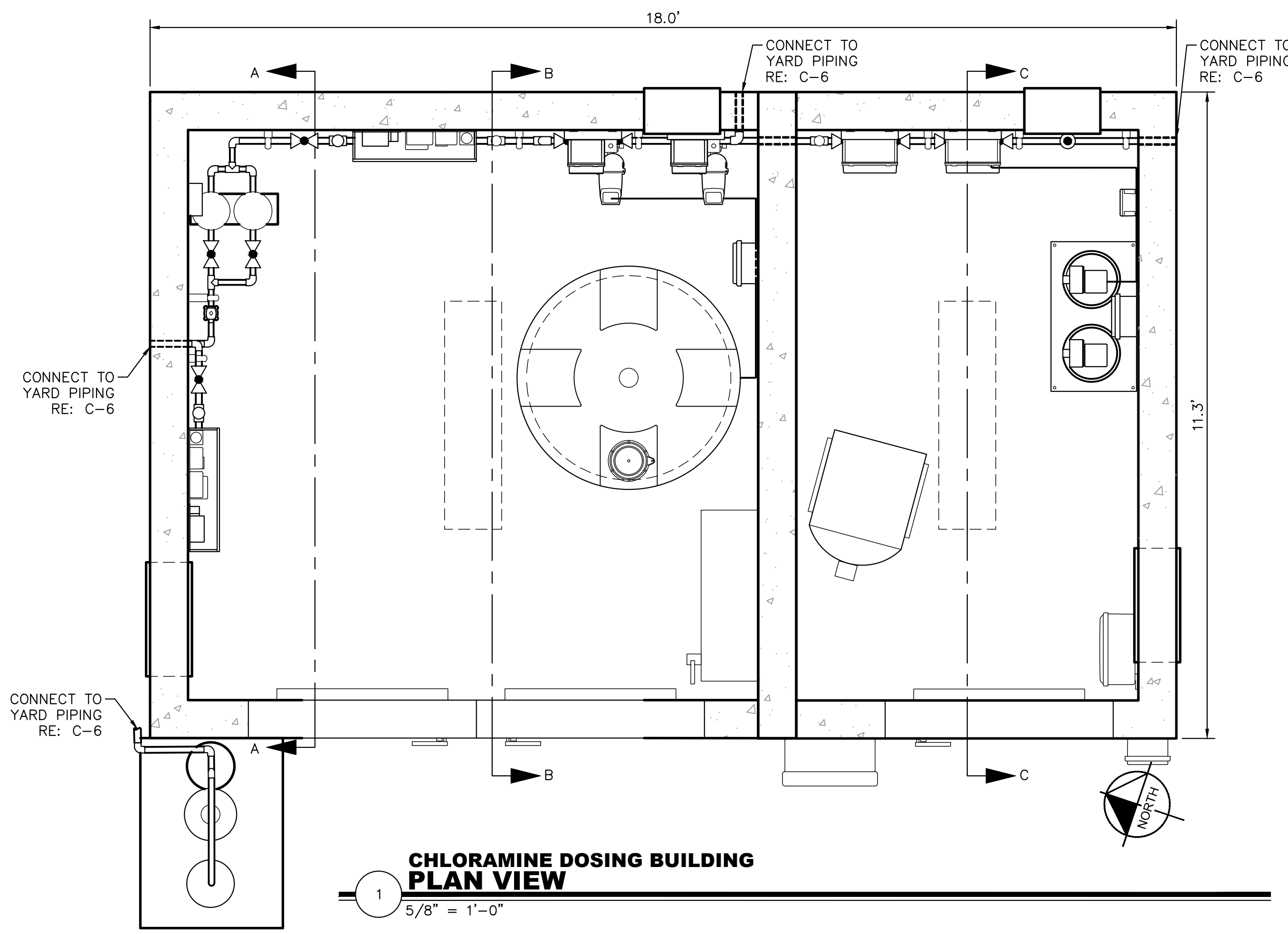
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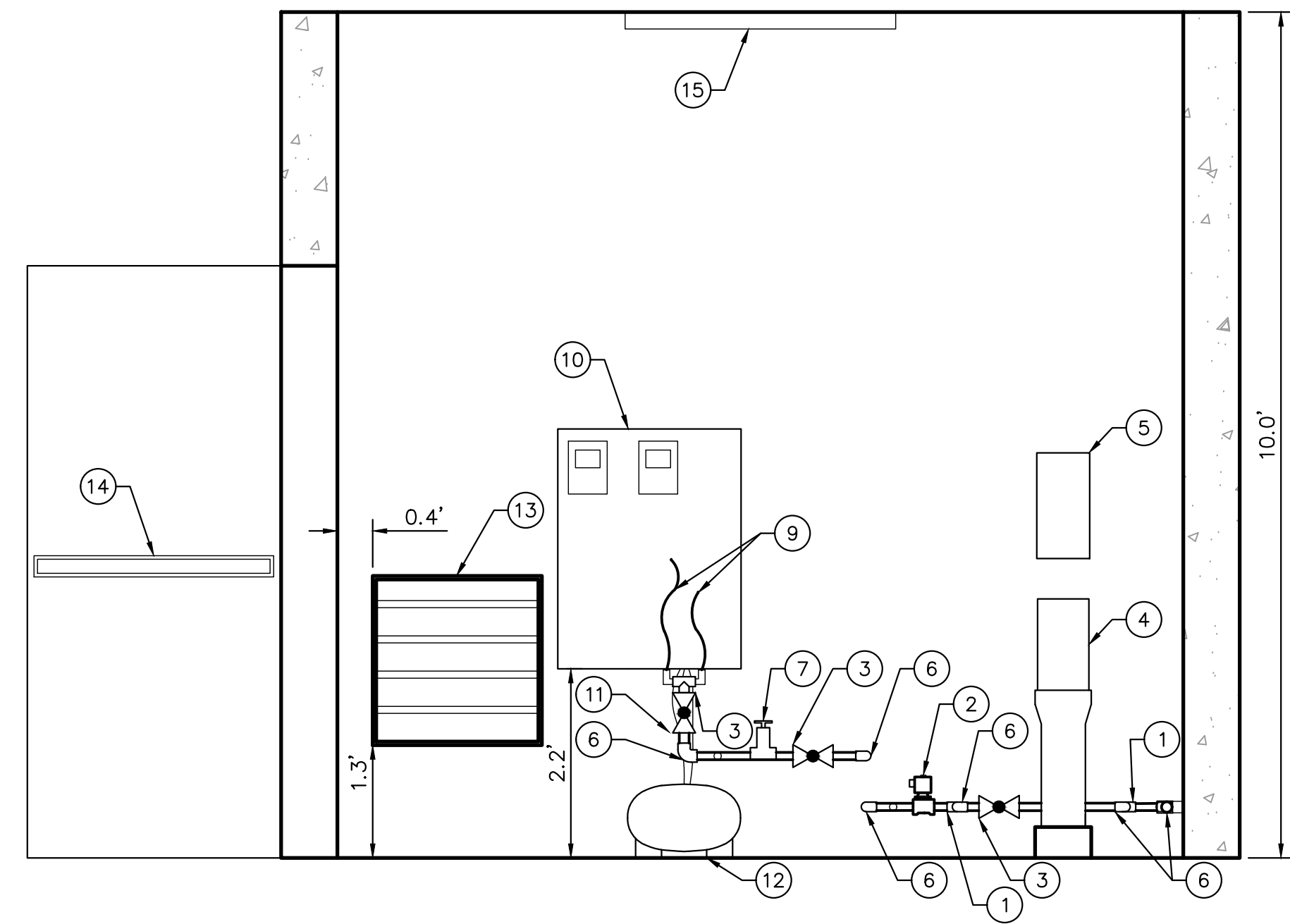
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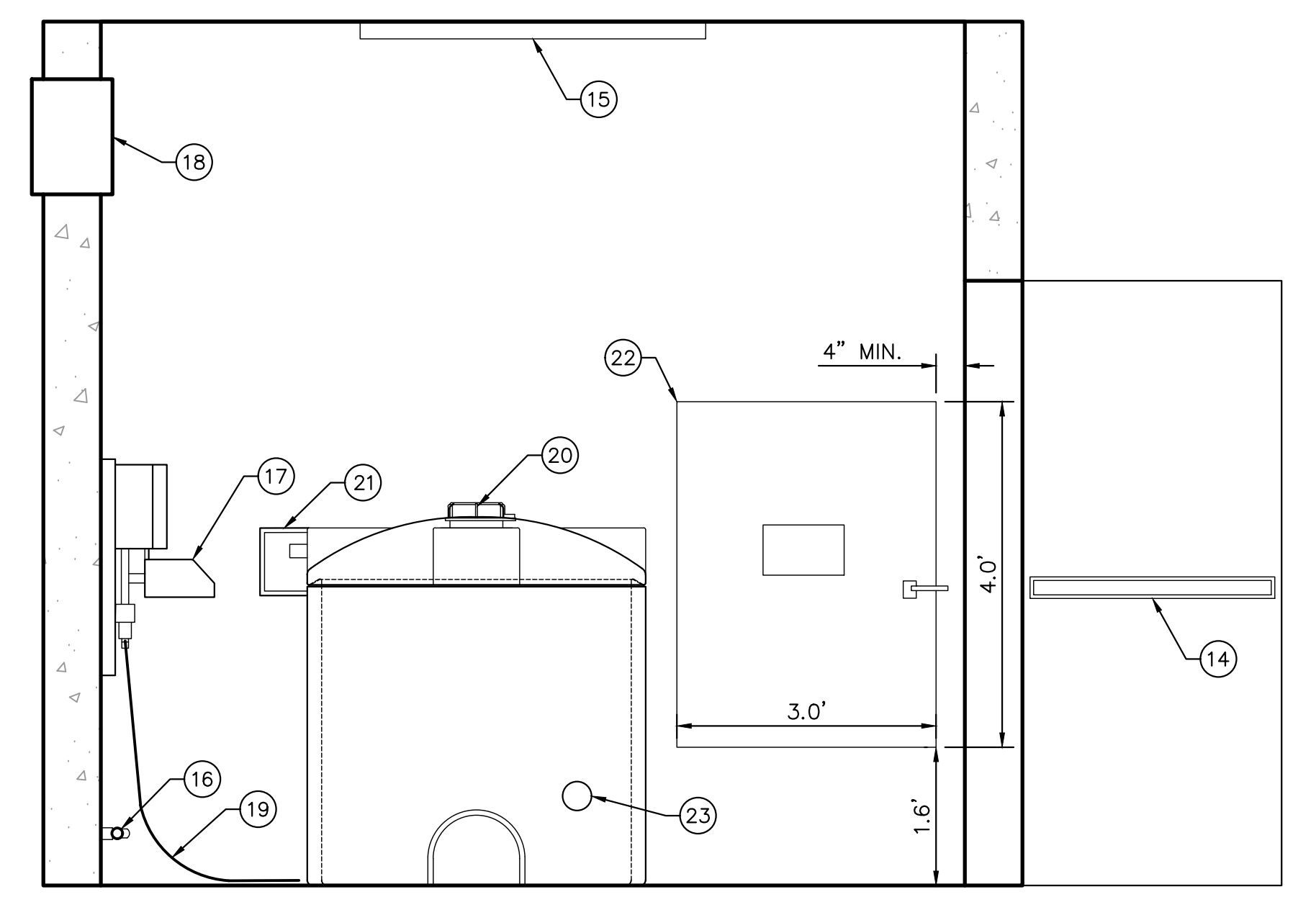


**1 CHLORAMINE DOSING BUILDING PLAN VIEW**  
 5/8" = 1'-0"

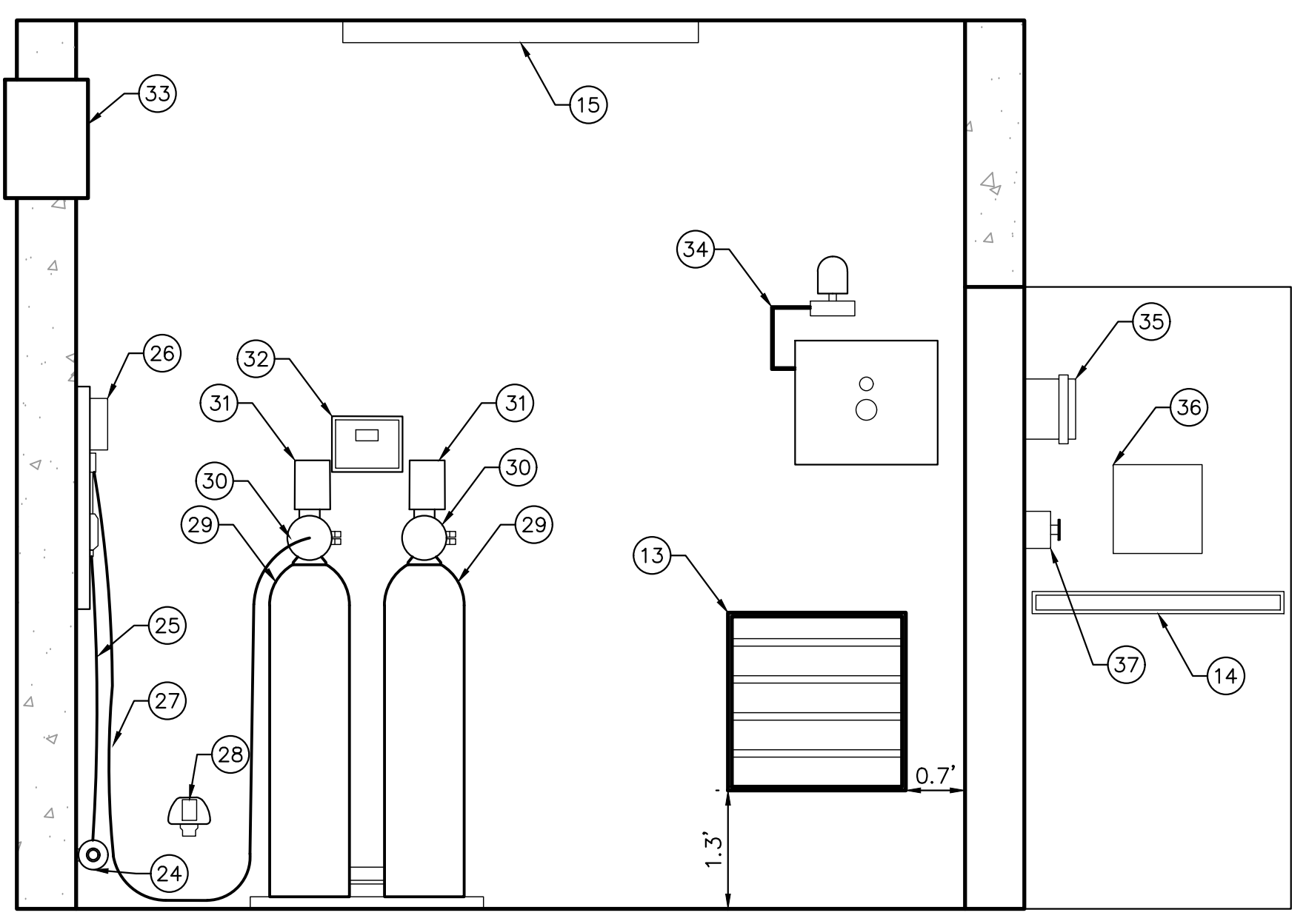


**A LAS ROOM - NORTH WALL A-A SECTION VIEW**  
 5/8" = 1'-0"

- CHEMICAL BUILDING NOTES**
- CONTRACTOR SHALL COORDINATE PENETRATION LOCATIONS ON PROPOSED DISINFECTION BUILDING WITH MANUFACTURER TO ALLOW FOR PROPOSED CHEMICAL AND WIRING CONNECTIONS.
  - CONTRACTOR SHALL DETERMINE AND PROVIDE ANY SLAB PENETRATIONS NECESSARY FOR ELECTRICAL WIRING PRIOR TO SLAB CONSTRUCTION.
  - ALL PVC PIPING, FITTINGS, VALVES, AND APPURTENANCES SHALL BE SCHEDULE 80 WITH SOLVENT WELDED JOINT AND FITTINGS. ALL MATERIALS SHALL BE NSF 61 AND NSF 372 APPROVED.
  - CONTRACTOR SHALL COORDINATE WITH BUILDING MANUFACTURER FOR APPROVED METHODS OF CONNECTING EQUIPMENT AND PANELS TO BUILDING WALLS.
  - ALL FLOOR FINISHES FOR THE CHEMICAL BUILDING MUST BE SEALED CONCRETE.
  - MATERIAL FOR CHEMICAL FEEDER PIPES SHALL BE COMPATIBLE WITH THE CHEMICAL BEING DOSED.
  - CONTRACTOR SHALL INSTALL CHEMICAL WARNING SIGNS ON EXTERIOR OF DOOR.
  - PVC PIPE SHALL BE BRACKETED TO WALL EVERY 24" (MAX.) AND AT EACH PIPE JOINT WITH GALVANIZED OR STAINLESS STEEL BRACKET.
  - DOUBLE-WALL TANK SHALL BE IN ACCORDANCE WITH TCEQ DOUBLE-WALL SPILL CONTAINMENT TANK REQUIRED CONDITIONS. ALL PENETRATIONS TO INNER TANK MUST BE THROUGH THE TOP OF THE TANK. NO SIDEWALL PENETRATIONS WILL BE ACCEPTED.



**B LAS ROOM - SOUTH WALL B-B SECTION VIEW**  
 5/8" = 1'-0"



**C CHLORINE ROOM - SOUTH WALL C-C SECTION VIEW**  
 5/8" = 1'-0"

- MATERIALS LIST**
- 1" PVC TEE
  - 1" SOLENOID VALVE
  - 1" BALL VALVE
  - DUPLEX BOOSTER PUMPS, FPS 1VR-11-00STG-1.5HP VERTICAL MULTI-STAGE
  - HEAVY DUTY PUMP SAFETY SWITCH
  - 1" 90° BEND
  - 1" PRESSURE RELEASE VALVE SET TO 260 PSI.
  - PVC PIPE TO BE BRACKETED TO WALL EVERY 24" (MAX.) AND AT EACH PIPE JOINT WITH GALVANIZED OR STAINLESS STEEL BRACKET
  - CHEMICAL ANALYZER 1/2" SAMPLE TUBING
  - CHEMICAL ANALYZERS RELOCATED FROM EST PEDESTAL
  - CHEMICAL ANALYZER 3/8" DRAIN LINE TUBING
  - 5 GALLON COLLECTION TANK
  - 24" X 24" FIBERGLASS LOUVER, SILL HEIGHT 16" ABOVE FINISHED FLOOR
  - EMERGENCY EGRESS PUSH BAR
  - 4'X1' LED STRIP LIGHT (RE: E-111)
  - 1" SCH. 80 PVC WATER LINE
  - LAS LIQUID VACUUM FEEDER
  - 12" EXHAUST FAN WITH HOOD, 2" FILTER, AND METAL GRATE
  - 3/8" SCH. 80 LAS FEEDER LINE
  - 250 GALLON DOUBLE WALL LAS TANK
  - LAS LEVEL INDICATOR CONTROLLER, JCS MODEL 4600-L AND ANALOG LEVEL GAUGE
  - RELOCATED SCADA PANEL FROM EST PEDESTAL
  - ANALOG LEVEL GAUGE
  - 1" VACUUM EJECTORS, JCS 420-INJ-12, 484X
  - 3/8" SCH. 80 CHLORINE INJECTION LINE
  - AUTOMATIC CHLORINATOR, JCS MRMT 0-100
  - 3/8" SCH. 80 CHLORINE FEED LINE
  - LEAK SENSOR, JCS 4500 D-CL DUAL CHANNEL
  - 150 LB CHLORINE TANK
  - VACUUM REGULATOR
  - EMERGENCY SHUTOFF VALVE
  - DUAL CYLINDER SCALE
  - 12" INTAKE FAN WITH HOOD, 2' FILTER, AND METAL GRATE
  - SHUTOFF VALVE CONTROLLER
  - LEAK SENSOR CONTROLLER
  - CLEAR, GAS-TIGHT INSPECTION WINDOW PER TAC 217.278(B)(2)
  - REMOTE PANIC BUTTON, JCS RPB001

KHA PROJECT 067785106	DATE AUGUST 2025	SCALE AS SHOWN	DESIGNED BY: VGB	DRAWN BY: NMT	CHECKED BY: SUK
<b>CITY OF GALVESTON</b> <b>UTMB EST</b> <b>REHABILITATION</b>					
<b>CHLORAMINE DOSING BUILDING (2 OF 2)</b>					
SHEET NUMBER <b>C-9</b>					

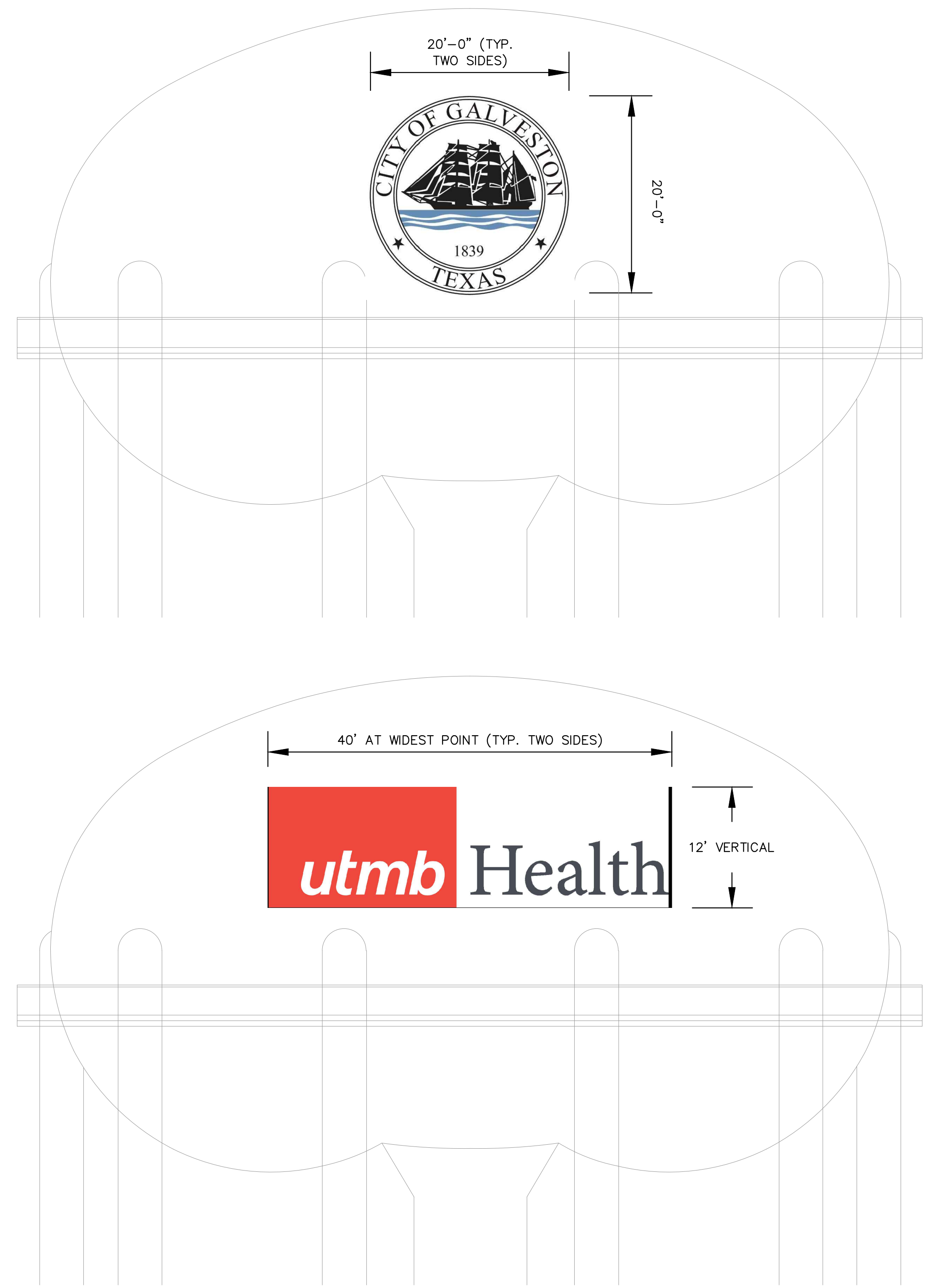
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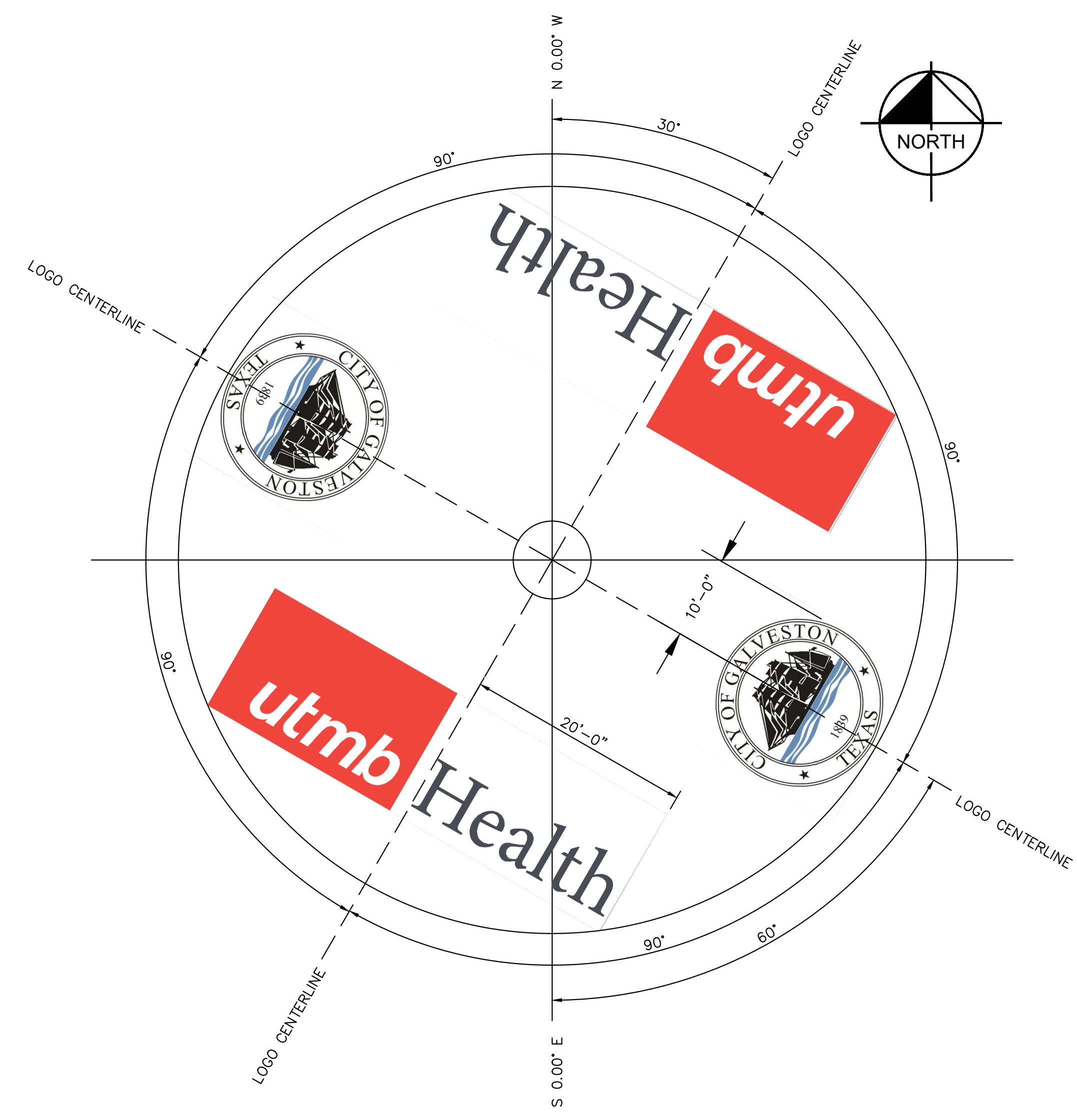
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- NOTES:**
1. CONTRACTOR SHALL INSTALL FOUR LOGOS (TWO CITY OF GALVESTON LOGOS AND TWO UTMB HEALTH LOGOS), ORIENTED AS SHOWN ON THIS SHEET IN DETAIL 2/C-10. CONTRACTOR SHALL COORDINATE WITH OWNER TO DETERMINE FINAL LOGO AND DIMENSION.
  2. TANK AND LOGO COLORS SHALL BE SELECTED BY THE OWNER.
  3. THE CONTRACTOR SHALL PROVIDE A MOCK-UP OF LOGO PAINTED WITH OWNER-SELECTED COLORS FOR OWNER'S APPROVAL.
  4. THE CONTRACTOR SHALL PROVIDE FINAL SIZING, PROPORTIONING AND ORIENTATION OF TANK LOGO FOR OWNER'S APPROVAL. THE SIZE OF THE LOGO WILL BE DETERMINED BY THE SPACE AVAILABLE.
  5. THE CONTRACTOR SHALL PAINT TANK IN ACCORDANCE WITH TECHNICAL SPECIFICATION 09871.

**1 TANK LOGO DETAIL**  
 SCALE: NOT TO SCALE

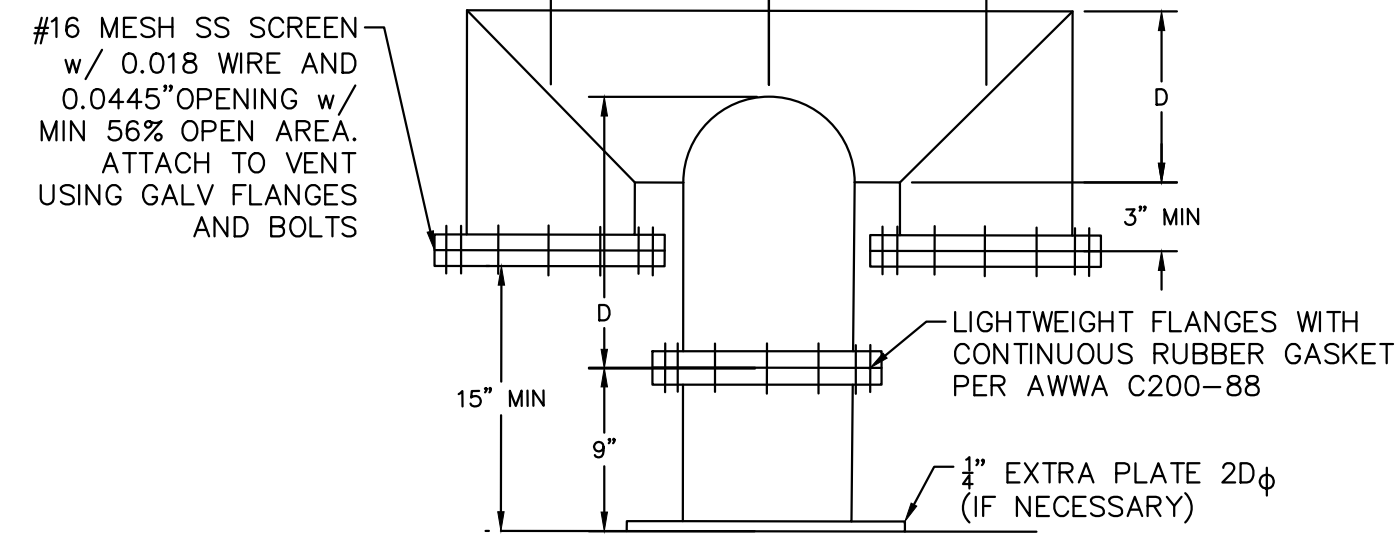


**2 TANK LOGO ORIENTATION DETAIL**  
 SCALE: NOT TO SCALE

REVISIONS		DATE	BY
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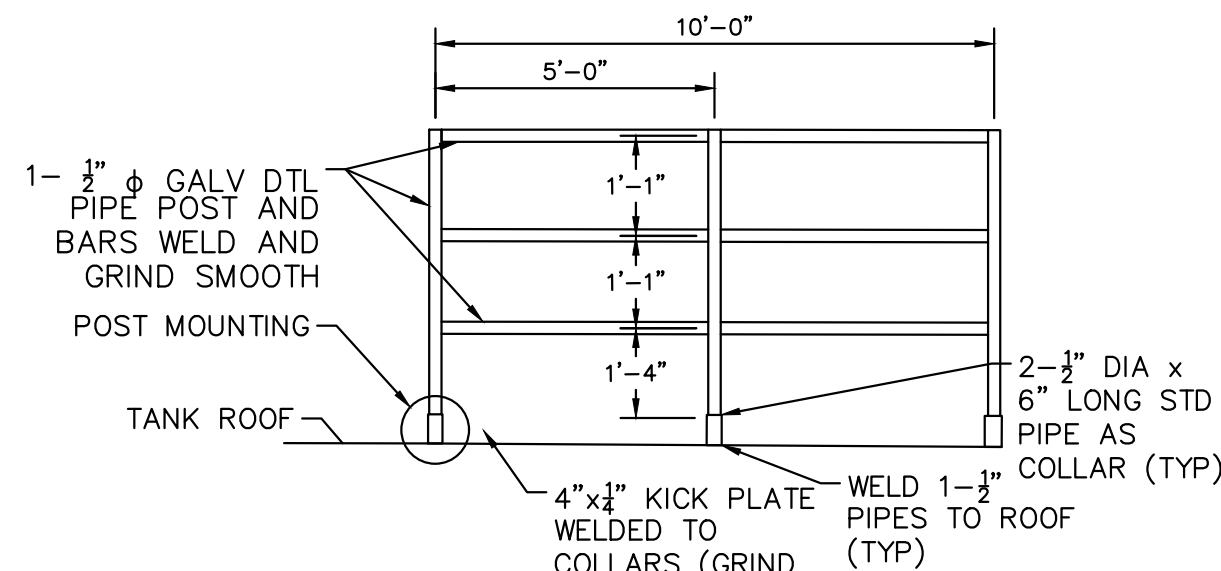
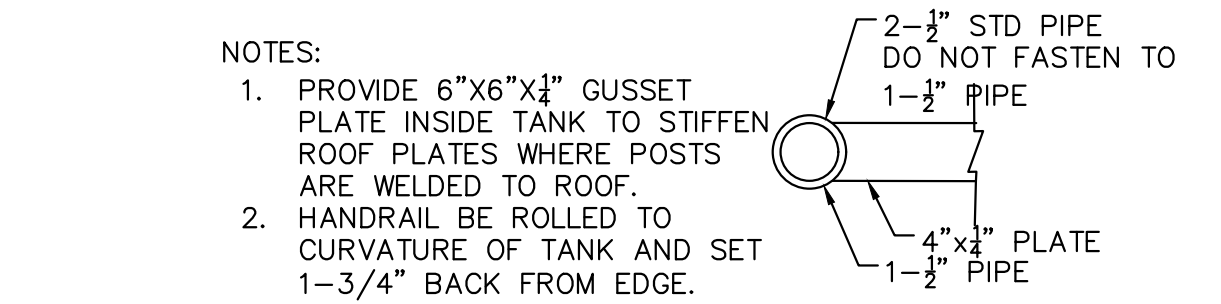
  

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SCALE AS SHOWN	DESIGNED BY: VGB DRAWN BY: NMT CHECKED BY: SUK
<b>CITY OF GALVESTON          UTMB EST          REHABILITATION</b>	
<b>TANK DETAILS</b>	
SHEET NUMBER <b>C-10</b>	

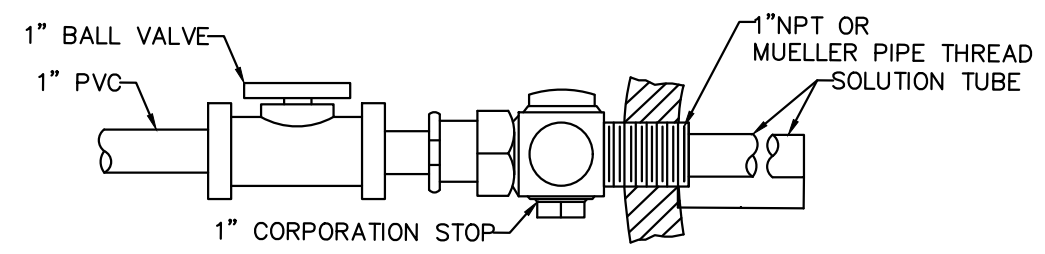


1. ROOF VENTS SHALL BE GOOSENECK OR ROOF VENTILATOR AND BE DESIGNED BY THE ENGINEER BASED ON THE MAXIMUM OUTFLOW FROM THE TANK. VENTS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH CURRENT AWWA STANDARDS AND SHALL BE EQUIPPED WITH APPROVED SCREENS TO PREVENT ENTRY OF ANIMALS, BIRDS, INSECTS, AND HEAVY AIR CONTAMINANTS. SCREENS SHALL BE FABRICATED OF CORROSION-RESISTANT MATERIAL AND SHALL BE 16-MESH OR FINER. SCREENS SHALL BE SECURELY CLAMPED IN PLACE WITH STAINLESS OF GALVANIZED BANDS OR WIRES AND SHALL BE DESIGNED TO WITHSTAND WINDS OF NOT LESS THAN TANK DESIGN CRITERIA (UNLESS SPECIFIED OTHERWISE BY ENGINEER.
2. VENT SIZE IDENTIFIED ON TANK SITE PLAN
3. VENT TO BE FABRICATED FROM THIN WALL SCHEDULE 40 STEEL PIPE AND HOT-DIP GALVANIZED.
4. ISOLATION KIT REQUIRED BETWEEN ALL DISSIMILAR METALS.
5. "D" IS THE PIPE DIAMETER.
6. ROOF VENT SHOULD BE SET OFF CENTER IN BETWEEN ROOF RAFTERS.

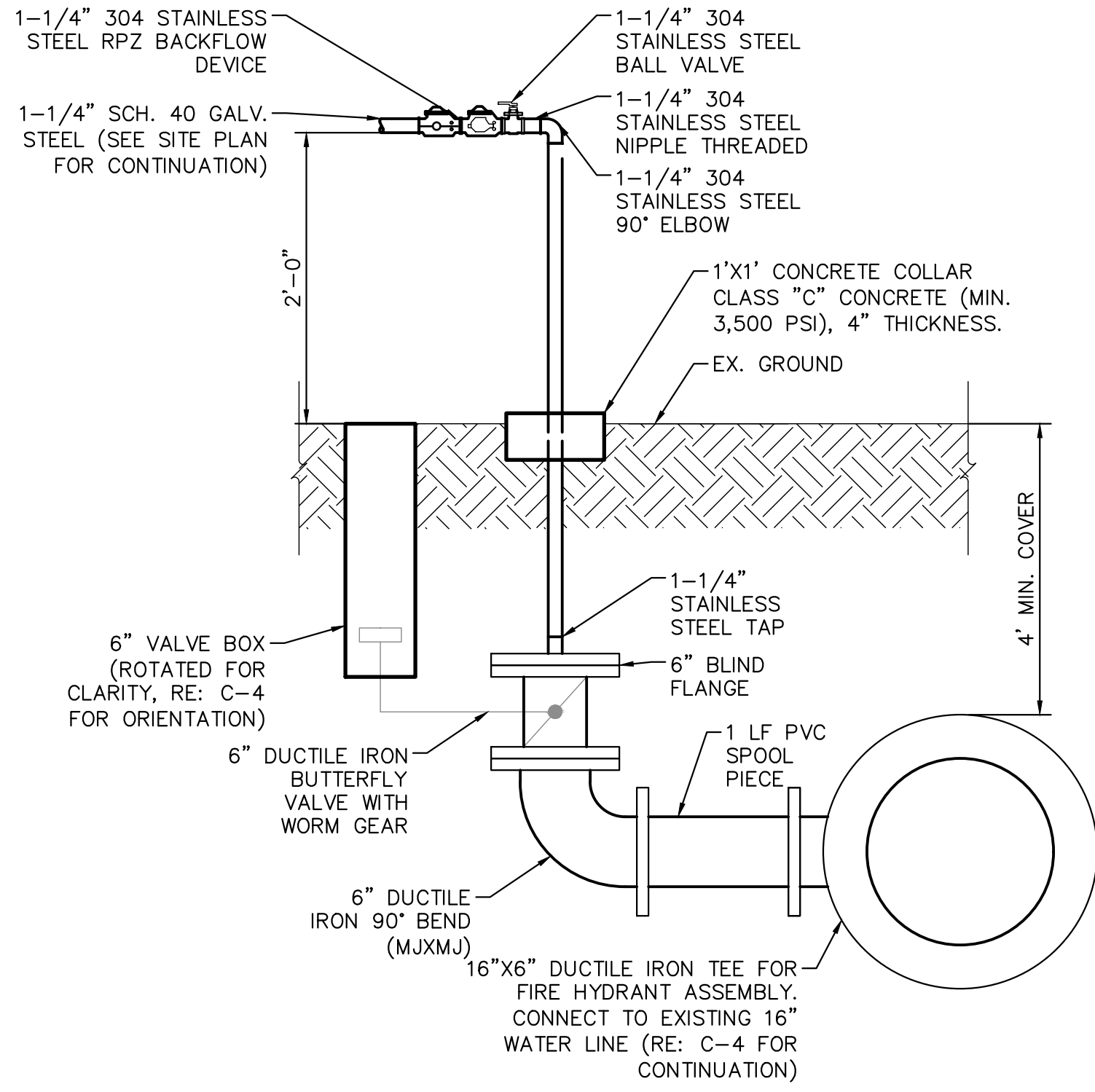
**1 ROOF VENT DETAIL**  
SCALE: NOT TO SCALE



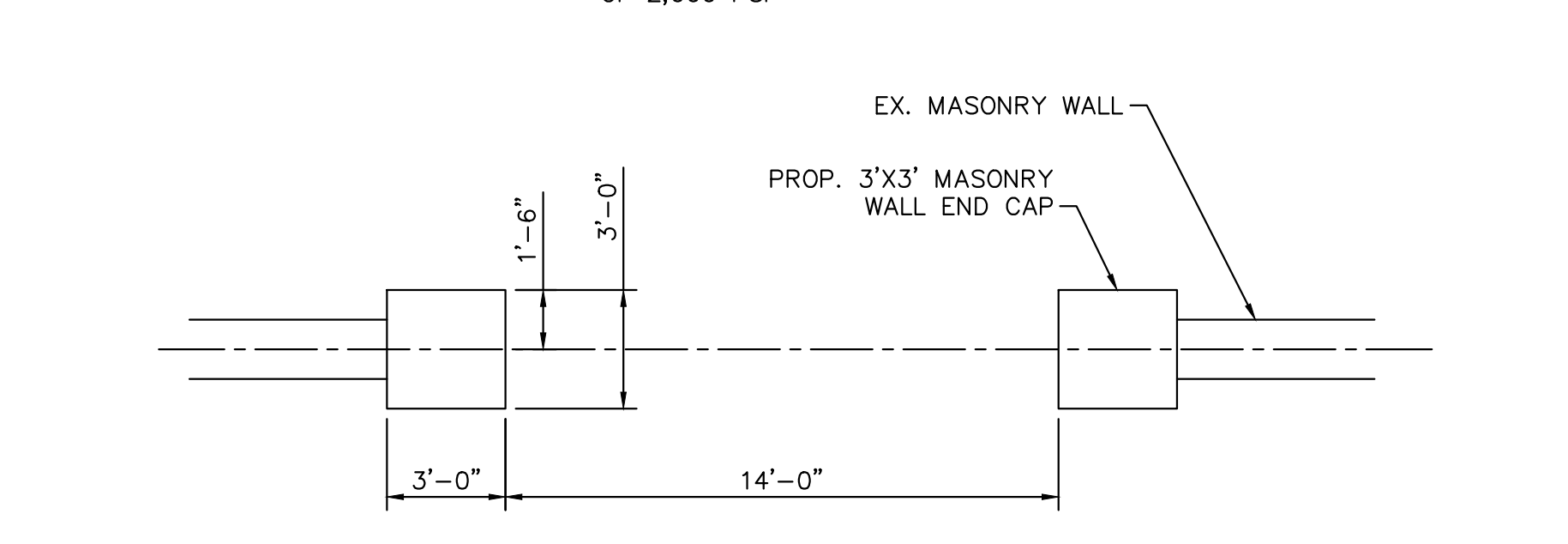
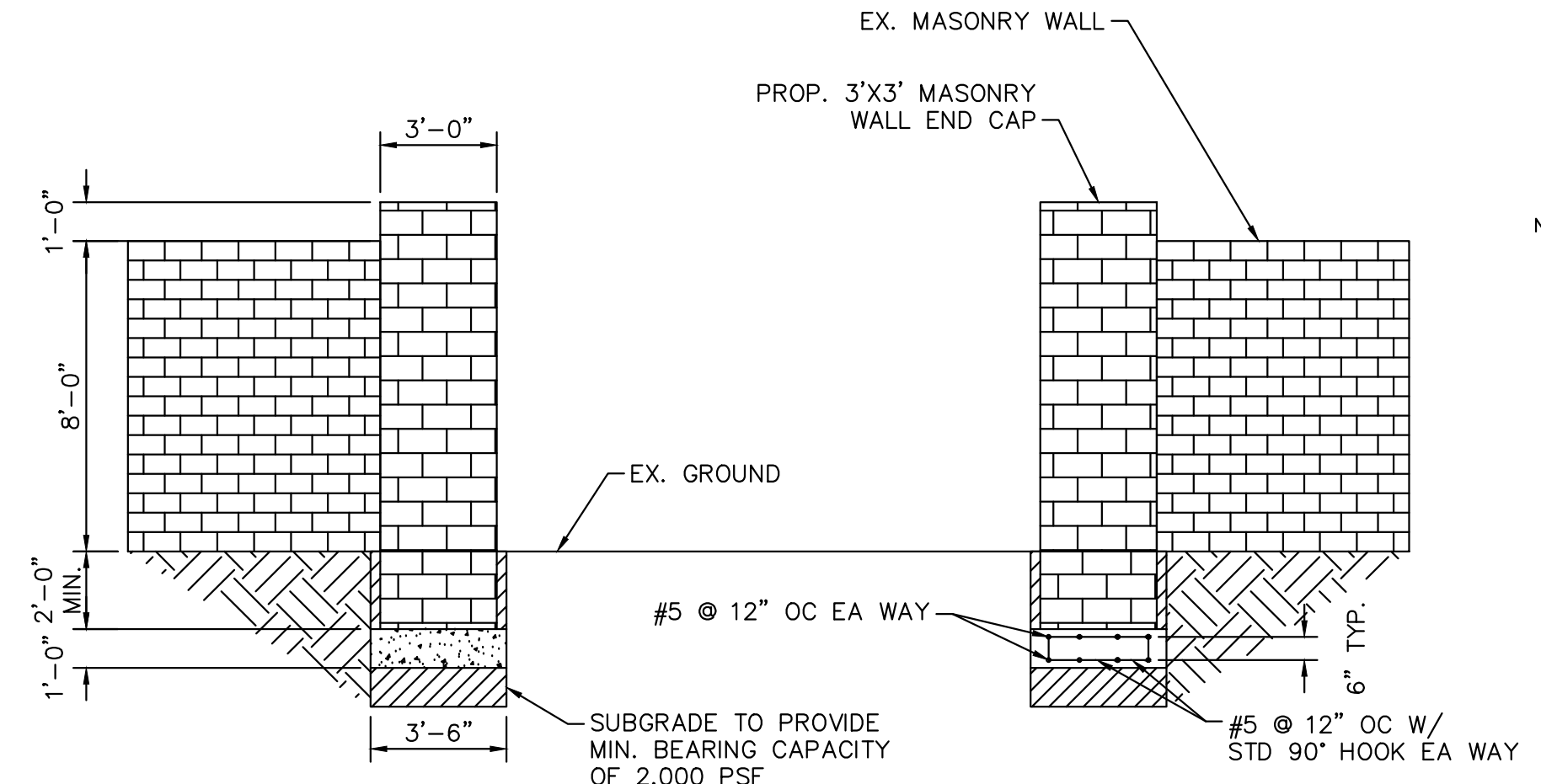
**2 SAFETY RAIL DETAIL**  
SCALE: NOT TO SCALE



**3 CHEMICAL INJECTION DETAIL**  
SCALE: NOT TO SCALE

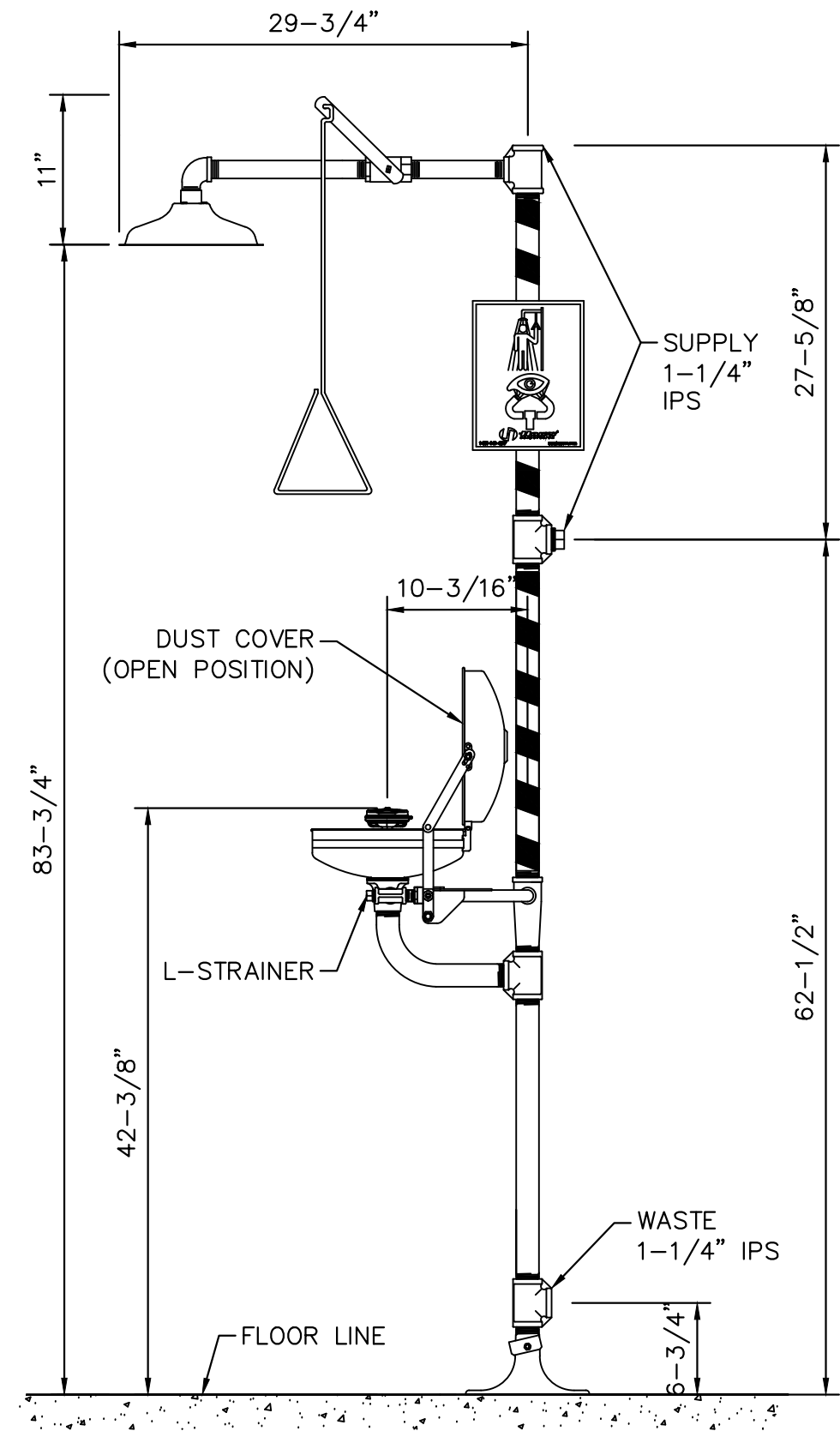
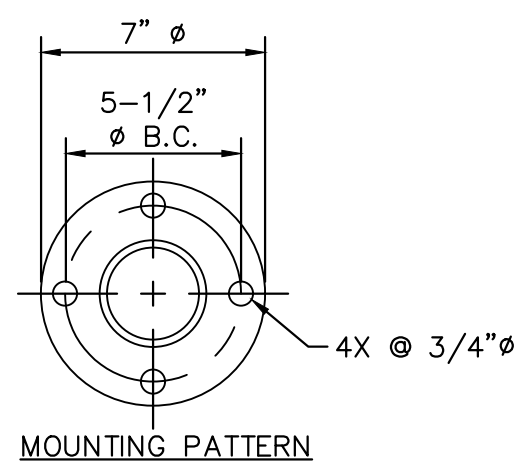
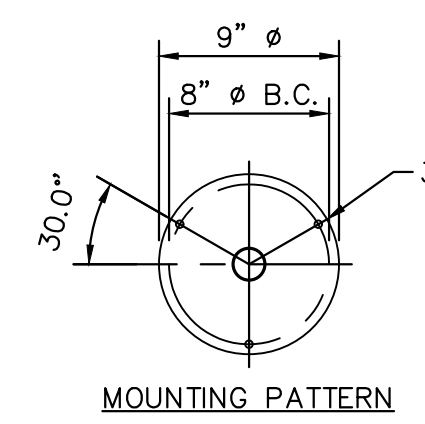


**4 1-1/4" WATER SERVICE CONNECTION WITH RPZ DETAIL**  
SCALE: NOT TO SCALE



**5 MASONRY WALL DETAIL**  
SCALE: NOT TO SCALE

- NOTE:
1. DESIGN IS BASED ON A PRESUMPTIVE LOAD-BEARING VALUE OF 2,000 PSF FOR CLASS 4 MATERIALS (SAND, SILTY SAND, CLAYEY SAND, SILTY GRAVEL, AND CLAYEY GRAEL) PER IBC TABLE 1806.2. CONTRACTOR TO SUBMIT A SITE SPECIFIC GEOTECHNICAL REPORT FROM THAT IS SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS WHICH CONFIRMS THAT THE EXISTING SOILS MATCH THE ASSUMED MATERIALS CLASS AND PRESUMPTIVE LOAD-BEARING PRESSURE WITHOUT SUBGRADE PREPARATION. IF THE GEOTECHNICAL ENGINEER RECOMMENDS SUBGRADE PREPARATION TO OBTAIN THE ASSUMED BEARING VALUES, THE CONTRACTOR IS TO PROVIDE SUBGRADE PREPARATION AS RECOMMENDED.



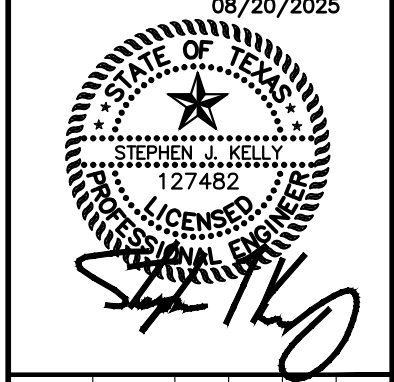
**6 OUTDOOR EYEWASH STATION**  
SCALE: NOT TO SCALE

- NOTES:
1. DIMENSIONS MAY VARY BY ± 1/2 INCH.
  2. TO COMPLY WITH ANSI Z358.1-2009 FOR EMERGENCY EYEWASH OR EYE/FACE WASH AND SHOWER EQUIPMENT:
    - UNIT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND ACCEPTABLE PLUMBING PRACTICES.
    - EYEWASH OR EYE/FACE WASH SHALL BE POSITIONED WITH NOZZLES NOT LESS THEN 33 IN. AND NO GREATER THAN 45 IN. FROM SURFACE ON WHICH USER STANDS AND 6 IN. MINIMUM FROM WALL OR NEAREST OBSTRUCTION.
    - SHOWER SHALL BE POSITIONED SO THAT SHOWER HEAD IS NOT LESS THAN 82 IN. NOR MORE THAN 96 IN. FROM SURFACE ON WHICH USER STANDS.
    - SHOWER SPRAY PATTERN SHALL HAVE A MINIMUM DIAMETER OF 20 IN. AT 60 IN. ABOVE SURFACE ON WHICH USER STANDS, AND CENTER OF SPRAY PATTERN SHALL BE LOCATED AT LEAST 16 IN. FROM ANY OBSTRUCTION.
  3. TYPE A & B OUTDOOR LOCATED EMERGENCY SHOWER: COMBINED SHOWER AND EYE/FACE WASH MEETING OSHA AND ANSI STANDARDS SHALL INCLUDE A STAINLESS STEEL 11" ROUND BOWL, AN AXION MSR STAINLESS STEEL EYE/FACE HEAD WITH INTEGRAL FLOW CONTROL. A FLOW SWITCH SHALL BE PROVIDED FOR ALARM INTERFACE WITH SCADA. UNIT SHALL ALSO INCLUDE AXION MSR STAINLESS STEEL SHOWERHEAD WITH FLOW CONTROL, STAINLESS STEEL DUST COVER, STAINLESS STEEL 50X50 MESH WATER STRAINER AND STAINLESS STEEL STAY-OPEN SHOWER AND EYEWASH BALL VALVE EQUIPPED WITH STAINLESS STEEL BALL AND STEM. UNIT SHALL ALSO INCLUDE A STAINLESS STEEL CAST 9" DIAMETER FLOOR FLANGE, TYPE 304 STAINLESS STEEL PIPE AND FITTINGS, UNIVERSAL SIGN, SELF-ADHESIVE SAFETY GREEN AND YELLOW STRIPES, 1-1/4" IPS SUPPLY, OVERTEMPERATURE/SCALD PROTECTION SHALL BE PROVIDED WITH A SELF-CONTAINED TEMPERATURE ACTIVATED VALVE (HAWS SP157B), SHOWER MANUFACTURER/MODEL: HAWS MODEL 8330 OR EQUAL.
  4. COMBINED SHOWER AND EYE/FACE WASH MEETING OSHA AND ANSI STANDARDS SHALL INCLUDE AN ABS PLASTIC 11" ROUND BOWL, AN AXION MSR ABS PLASTIC EYE/FACE HEAD WITH INTEGRAL FLOW CONTROL. A FLOW SWITCH SHALL BE PROVIDED FOR ALARM INTERFACE WITH SCADA. UNIT SHALL ALSO INCLUDE AXION MSR STAINLESS ABS PLASTIC STRAINER AND STAINLESS STEEL STAY-OPEN SHOWER AND EYEWASH BALL VALVE EQUIPPED WITH STAINLESS STEEL BALL AND STEM, GREEN EPOXY FINISH. UNIT SHALL ALSO INCLUDE A 2 1/2" SCHEDULE 80 PVC VERTICAL PIPE, FITTINGS AND FLOOR FLANGE, UNIVERSAL SIGN, SELF-ADHESIVE SAFETY GREEN AND YELLOW STRIPES, 1 1/4" IPS SUPPLY. SHOWER MANUFACTURER/MODEL: HAWS MODEL 8336 OR EQUAL.

NO.	REVISIONS	DATE	BY

**Kimley»Horn**

STATE OF TEXAS REGISTRATION NO. F-828  
11700 KATY FREEMAN, SUITE 800, HOUSTON, TX 77079  
WWW.KIMLEY-HORN.COM  
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KHA PROJECT	067785106
DATE	AUGUST 2025
SCALE AS SHOWN	DESIGNED BY: VGB
DRAWN BY: NMT	CHECKED BY: SUK

**CITY OF GALVESTON  
UTMB EST  
REHABILITATION**

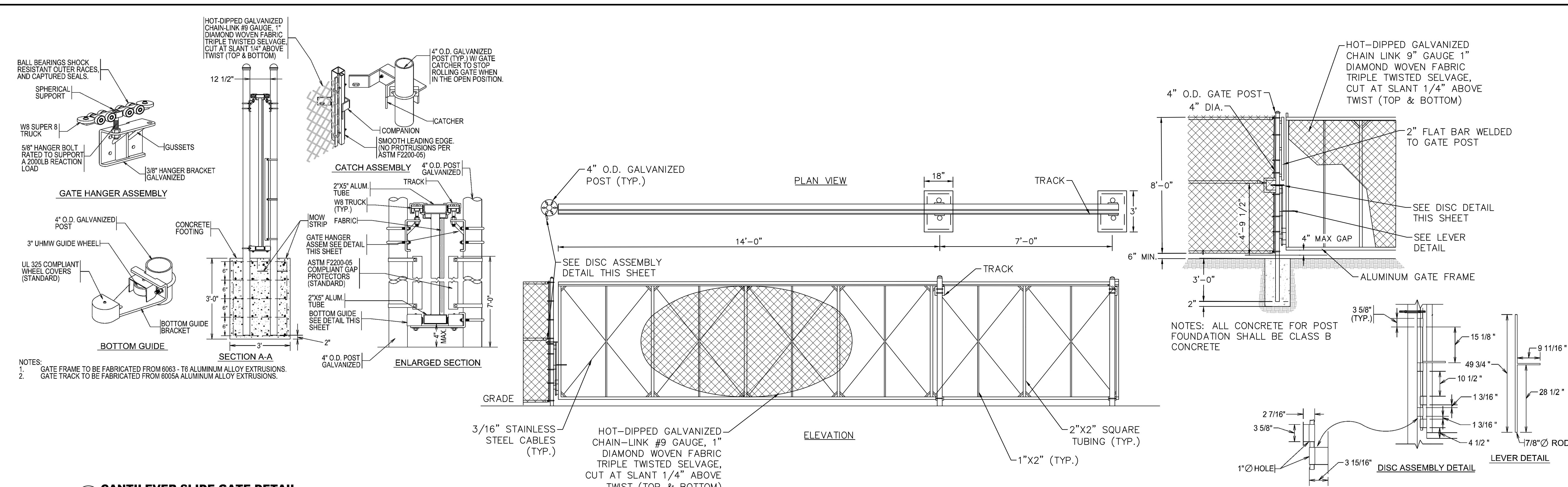
**CONSTRUCTION  
DETAILS (1 OF 5)**

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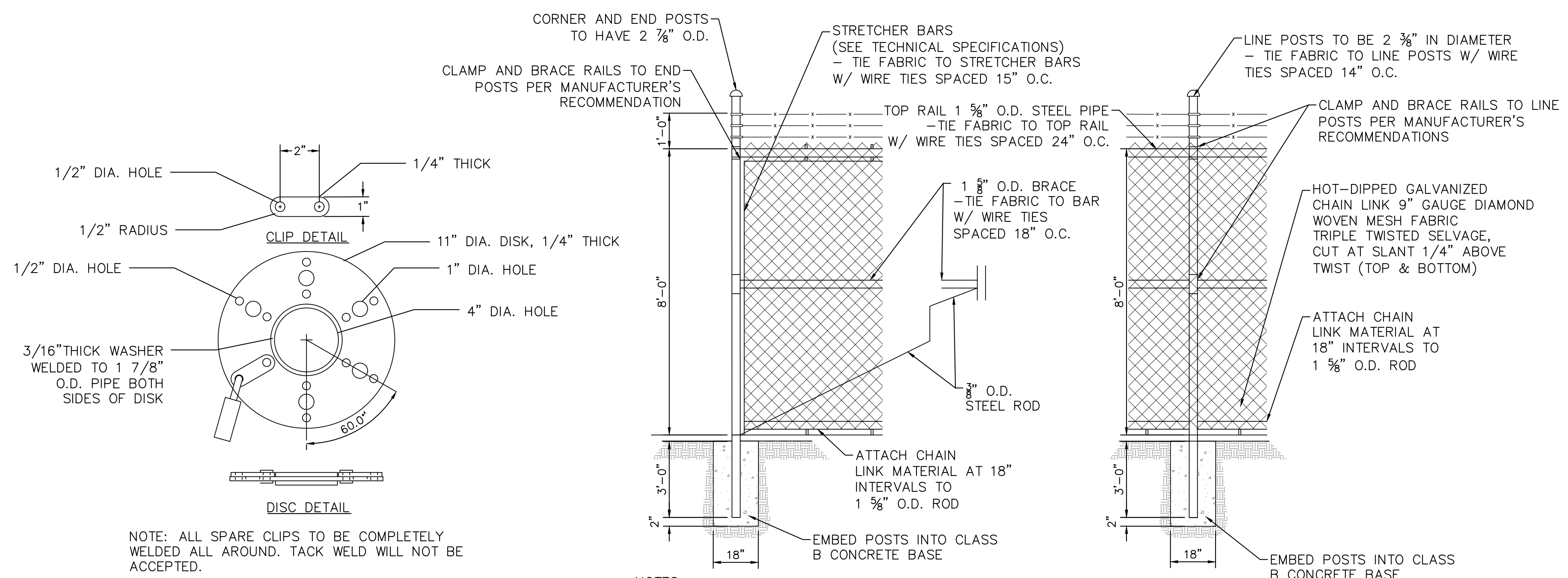
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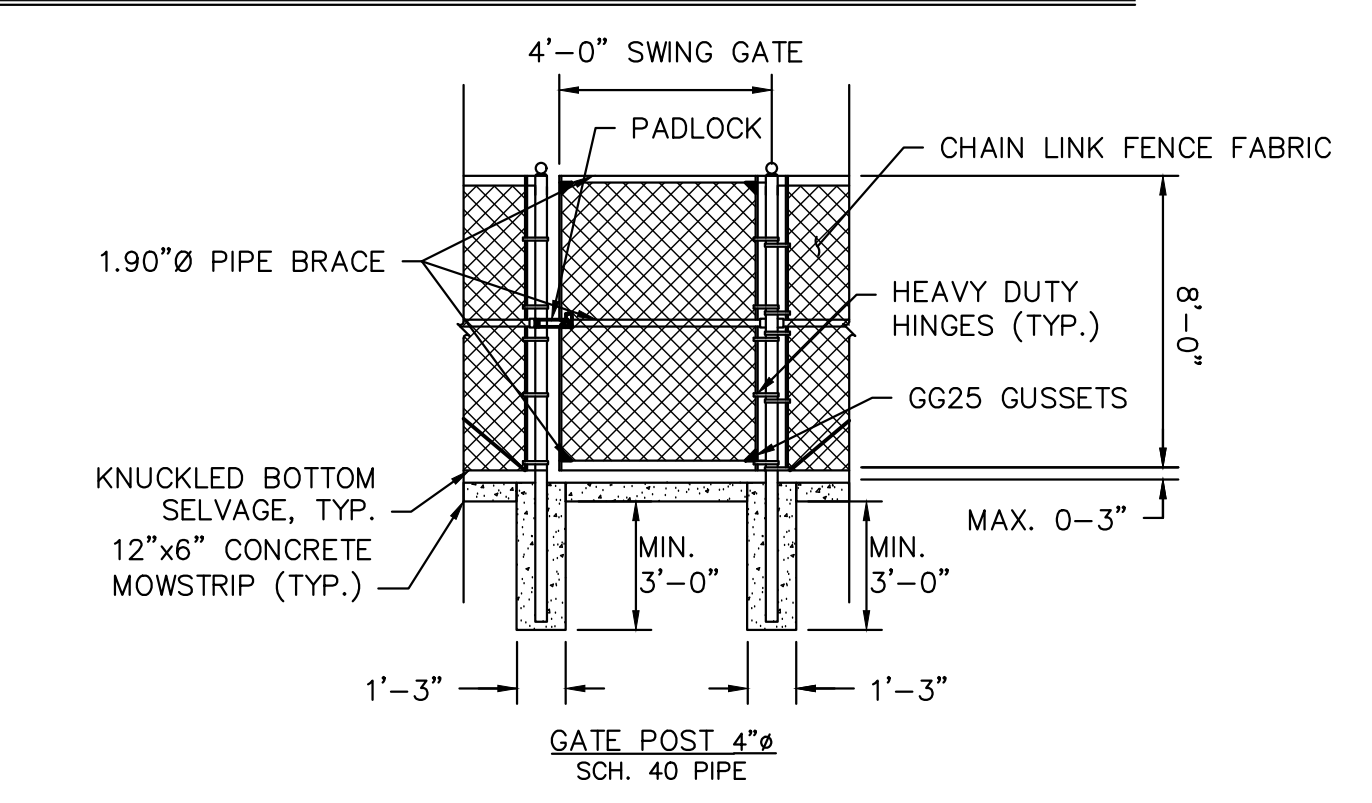
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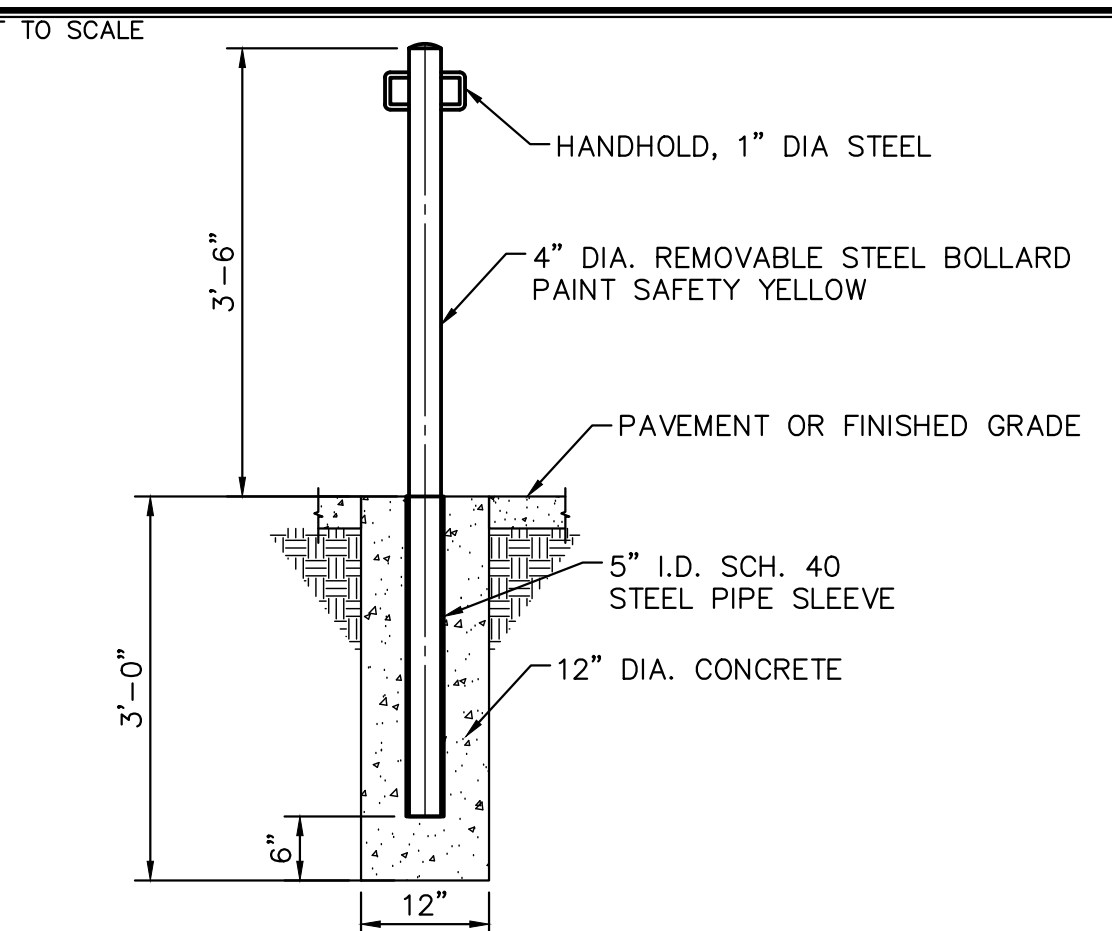
**2 CANTILEVER SLIDE GATE DISC DETAIL**  
 SCALE: NOT TO SCALE

- NOTES:
- CHAIN-LINK FENCE SHALL COMPLY WITH SPEC 02831.
  - ALL CONCRETE FOR POST FOUNDATION SHALL BE CLASS B CONCRETE.
  - THE BOTTOM EDGE OF ALL FENCING SHALL BE TWISTED AND BARBED.
  - LINE POSTS SHALL HAVE A MAXIMUM SPACING OF 10 FEET O.C.
  - WIRE FABRIC FOR FENCING SHALL HAVE A MINIMUM TENSILE STRENGTH OF 80,000 PSI.
  - MESH SIZE SHALL BE 2" + 1/16" BETWEEN PARALLEL WIRES.
  - FABRIC TIES SHALL BE HOG RINGS, GALVANIZED STEEL WIRE, NOT LESS THAN 9 GAUGE WITH A ZINC COATING OF NOT LESS THAN 1.2 OUNCES/SF.
  - POST CAPS FOR PIPE SECTIONS SHALL BE DESIGNED TO EXCLUDE ALL MOISTURE. EXTENSION ARMS SHALL BE INTEGRAL WITH POST CAPS. ALL POST CAPS SHALL HAVE A 2" SKIRT FOR RIGIDITY.

**3 CHAIN-LINK FENCE DETAIL**  
 SCALE: NOT TO SCALE



**4 CHAIN LINK PEDESTRIAN GATE**  
 SCALE: NOT TO SCALE

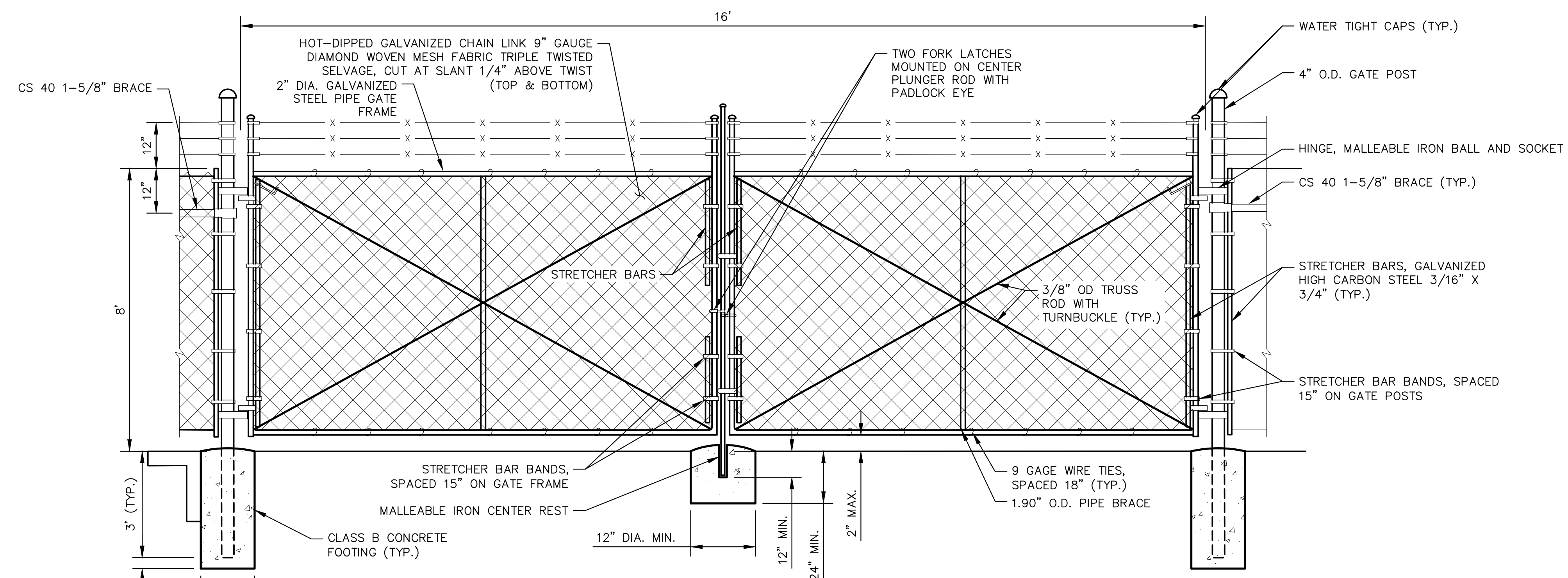


**5 REMOVABLE BOLLARD DETAIL**  
 SCALE: NOT TO SCALE

NO.	DATE	BY					
STATE OF TEXAS REGISTRATION NO. F-928 11700 KATY FREEMAN SUITE 800 HOUSTON, TX 77079 WWW.KIMLEY-HORN.COM © 2025 KIMLEY-HORN AND ASSOCIATES, INC.							
KHA PROJECT	DATE	SCALE	DESIGNED BY	DRAWN BY	CHECKED BY		
067785106	AUGUST 2025	AS SHOWN	VGB	NMT	SKK		
<b>CITY OF GALVESTON                  UTMB EST                  REHABILITATION</b>							
<b>CONSTRUCTION                  DETAILS (2 OF 5)</b>							
SHEET NUMBER <b>C-12</b>							

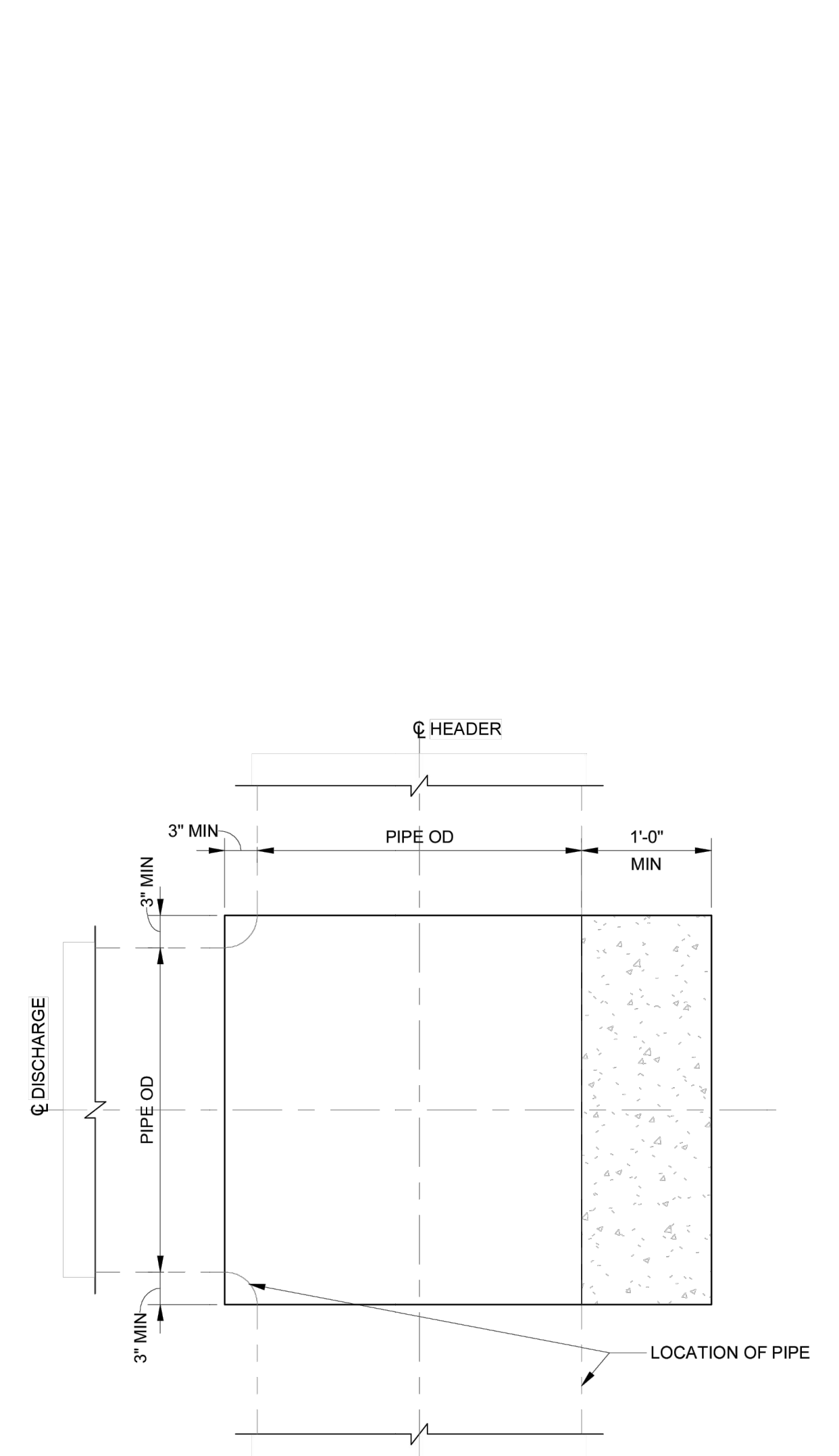
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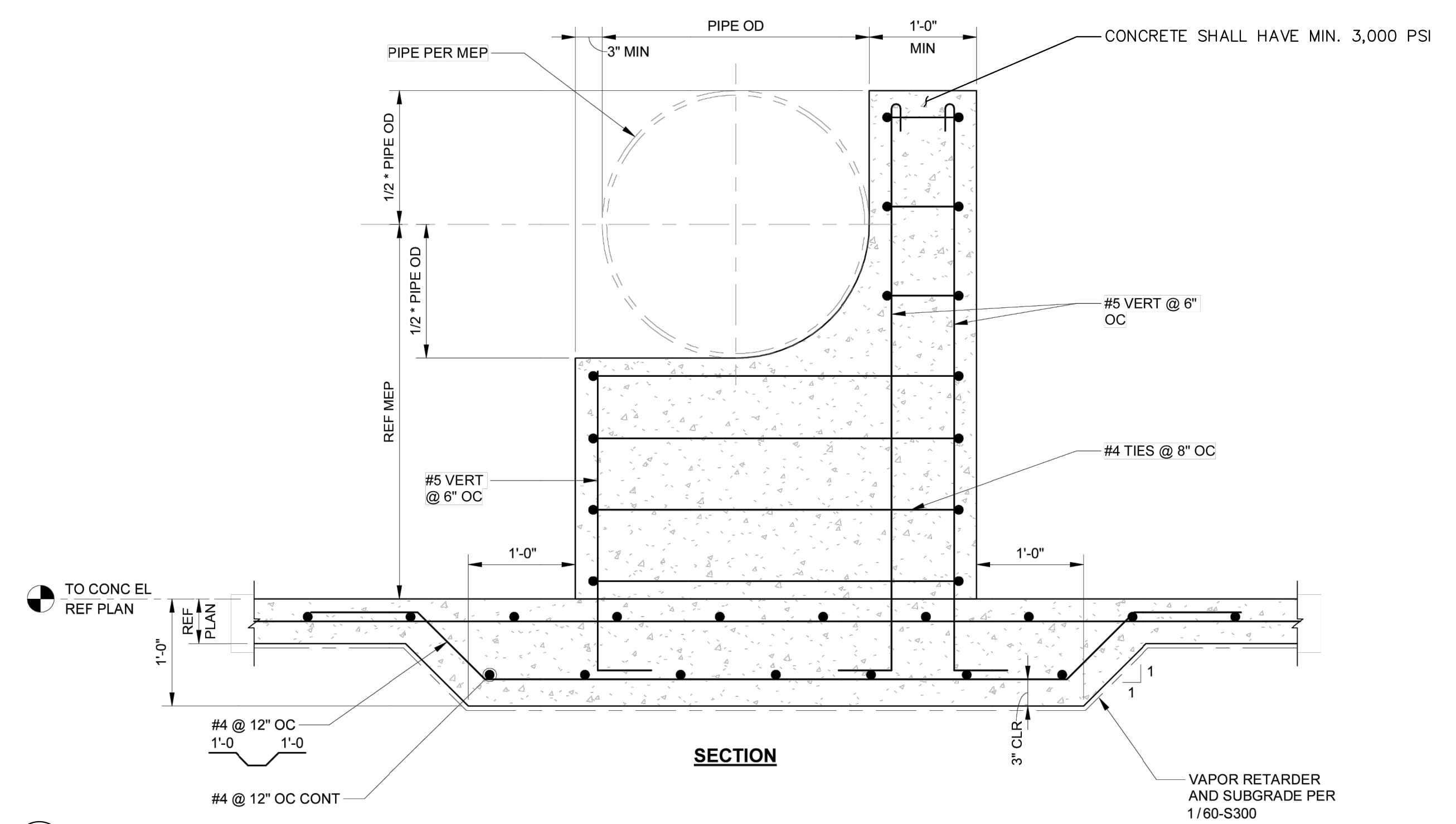


- NOTES:
- CHAIN LINK DOUBLE SWING GATE SHALL COMPLY WITH SPEC 02821.
  - ALL CONCRETE FOR POST FOUNDATION SHALL BE CLASS B CONCRETE.
  - WIRE FABRIC FOR FENCING SHALL HAVE A MINIMUM TENSILE STRENGTH OF 80,000 PSI.
  - MESH SIZE SHALL BE 2" + 1/16" BETWEEN PARALLEL WIRES.
  - FABRIC TIES SHALL BE HOG RINGS, GALVANIZED STEEL WIRE NOT LESS THAN 9 GAUGE WITH A ZINC COATING OF NOT LESS THAN 1.2 OUNCES/SF.
  - POST CAPS FOR PIPE SECTIONS SHALL BE DESIGNED TO EXCLUDE ALL MOISTURE. EXTENSION ARMS SHALL BE INTEGRAL WITH POST CAPS. ALL POST CAPS SHALL HAVE A 2" SKIRT FOR RIGIDITY.

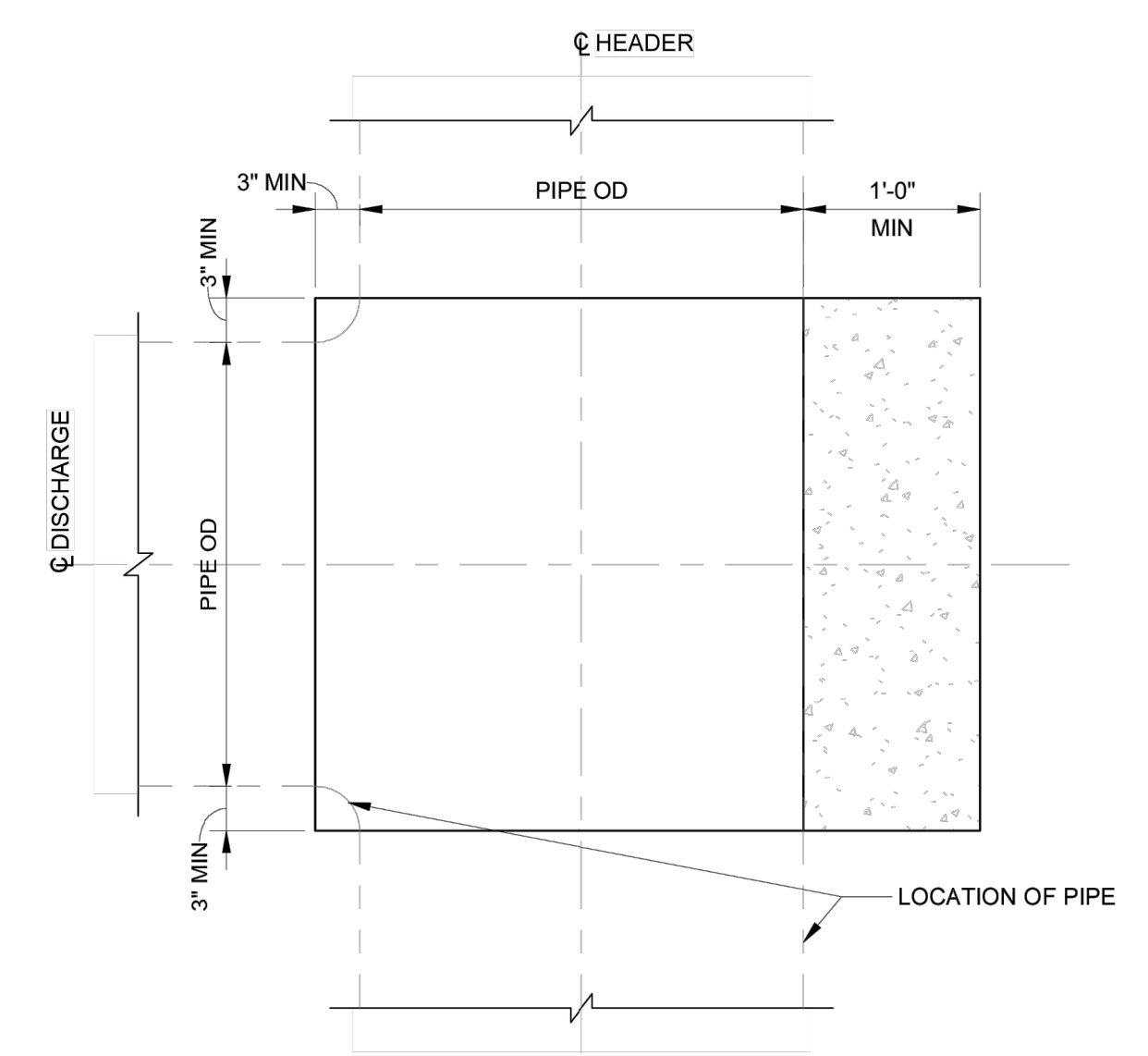
**1 CHAIN LINK DOUBLE SWING GATE DETAIL**  
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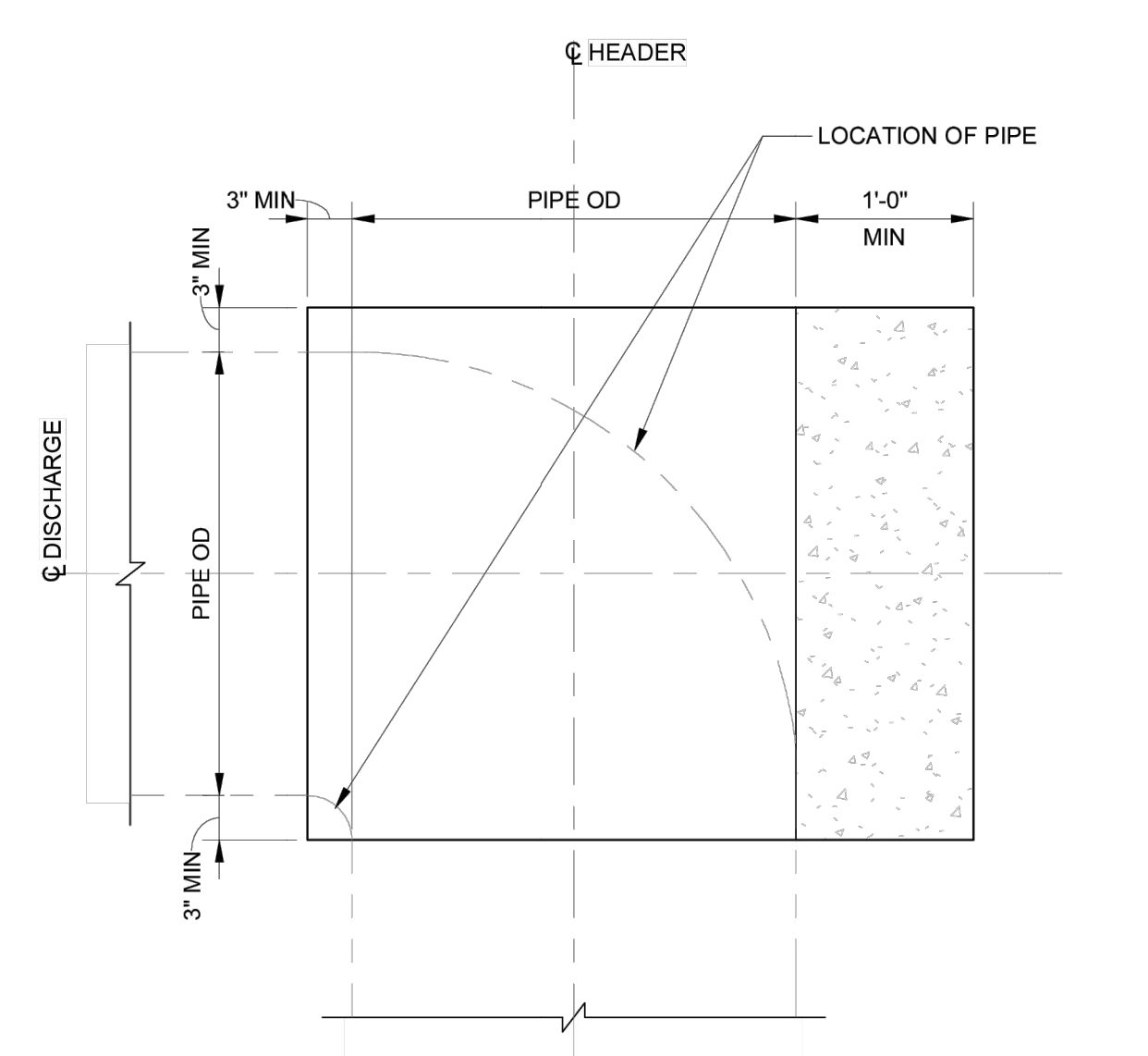
**PLAN - THRUST BLOCK AT TEE**



**2 CONCRETE THRUST BLOCK**  
 SCALE: NOT TO SCALE



**PLAN - THRUST BLOCK AT TEE**

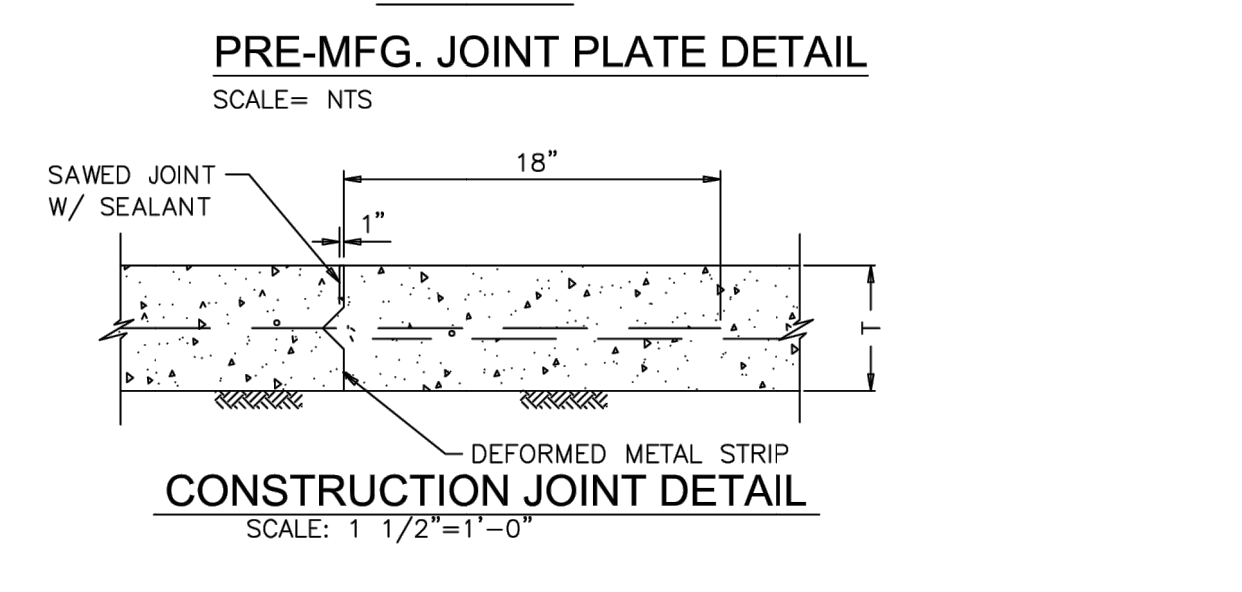
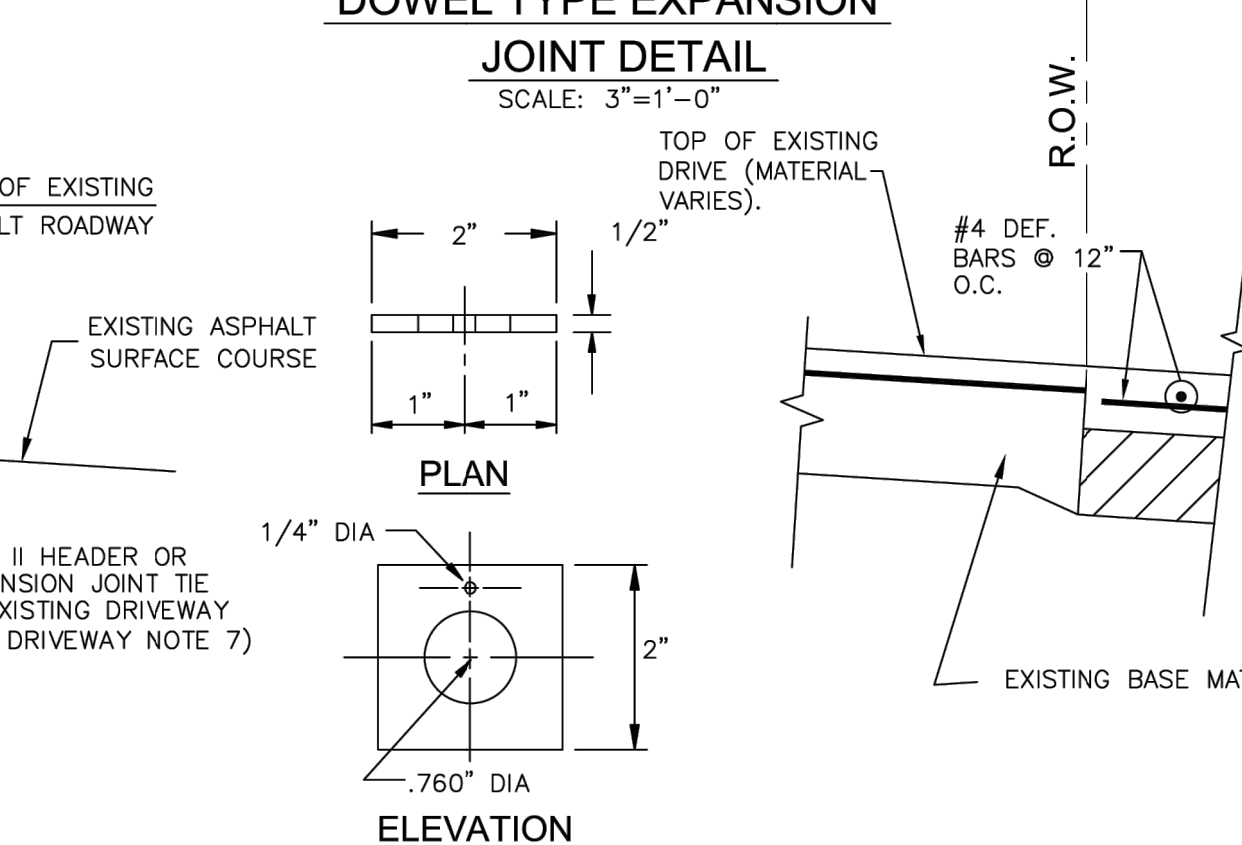
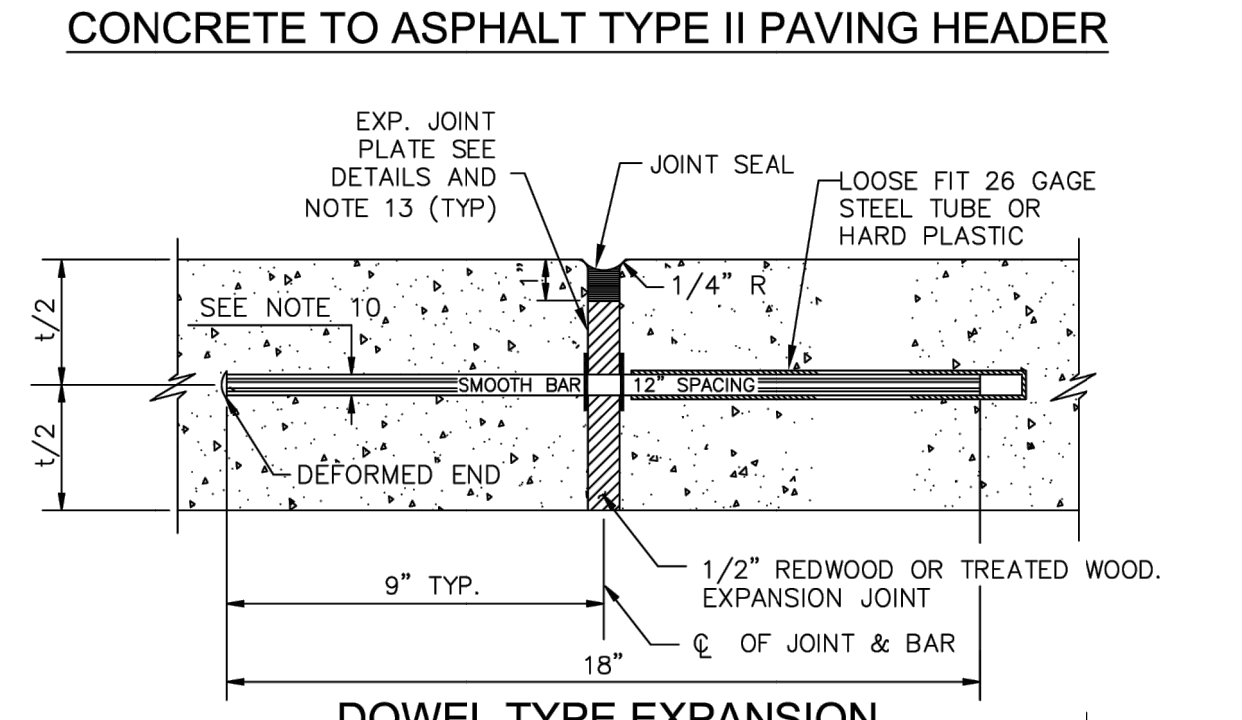
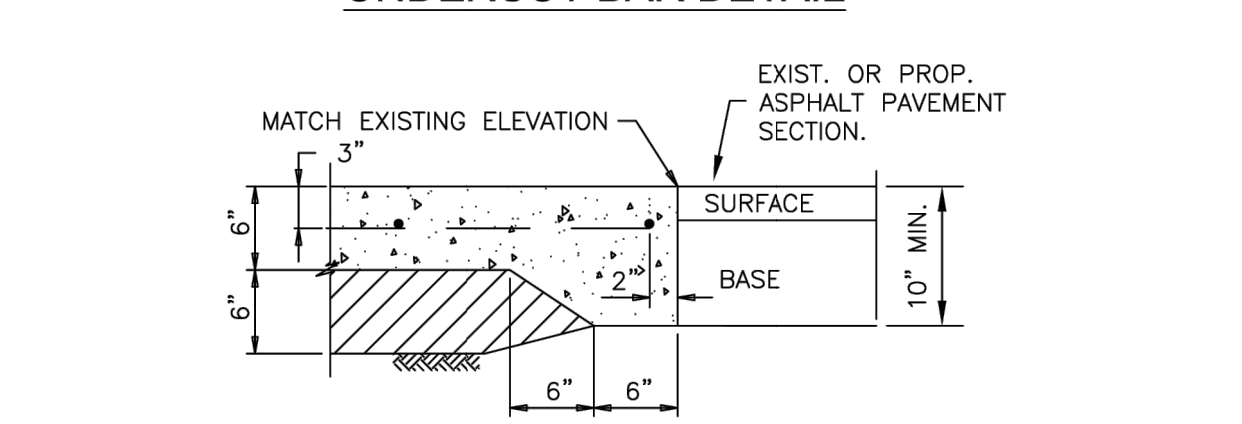
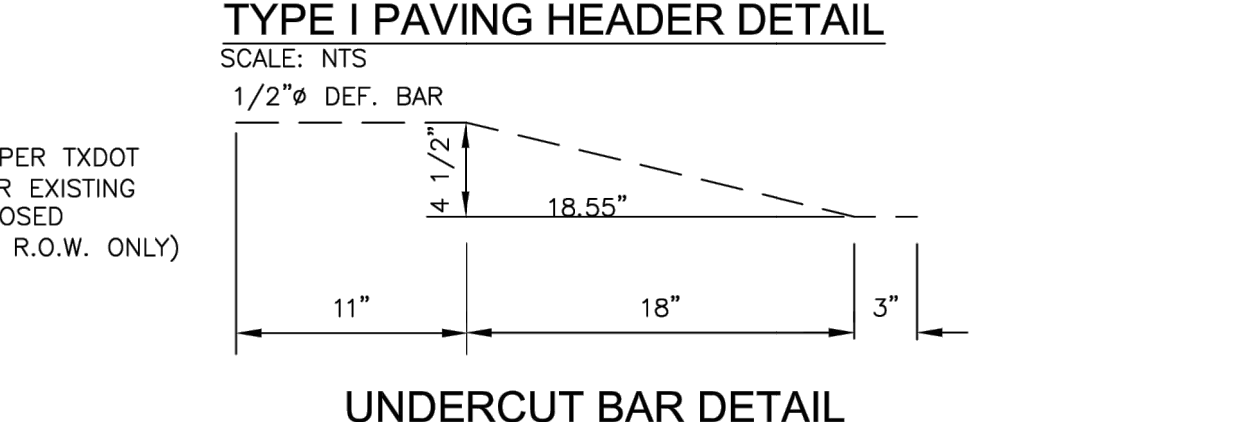
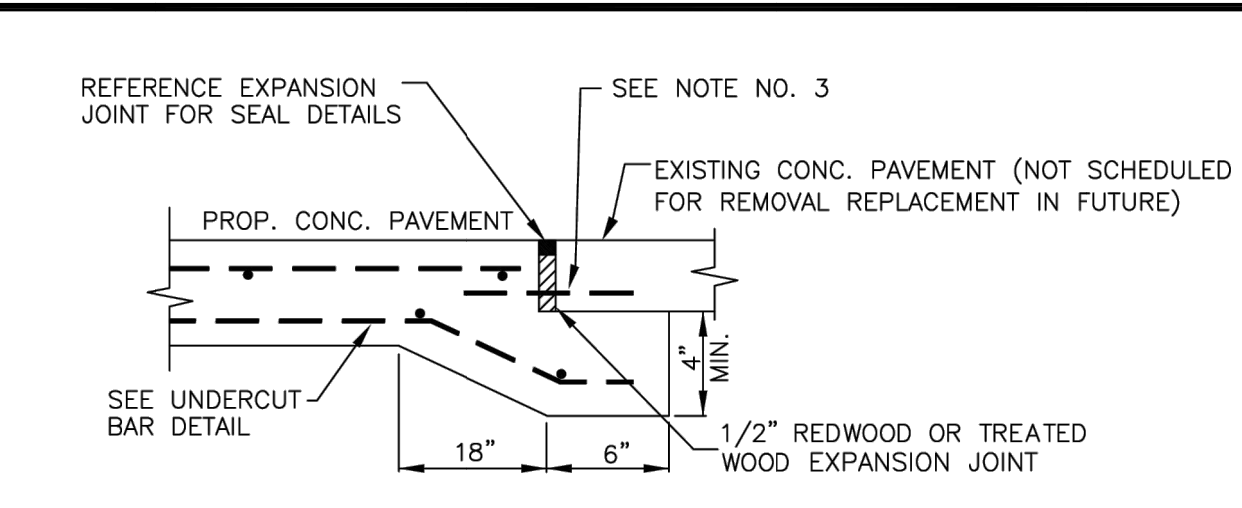
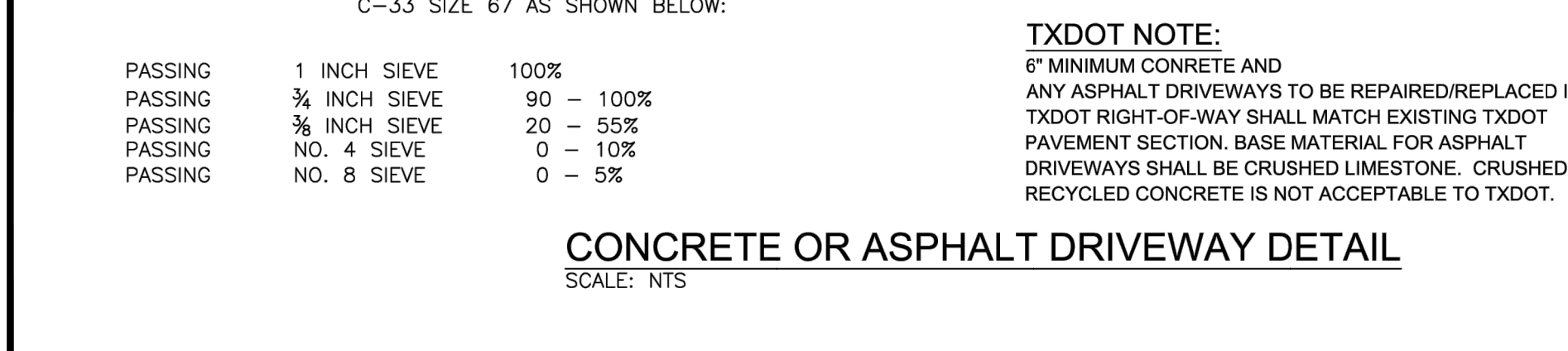
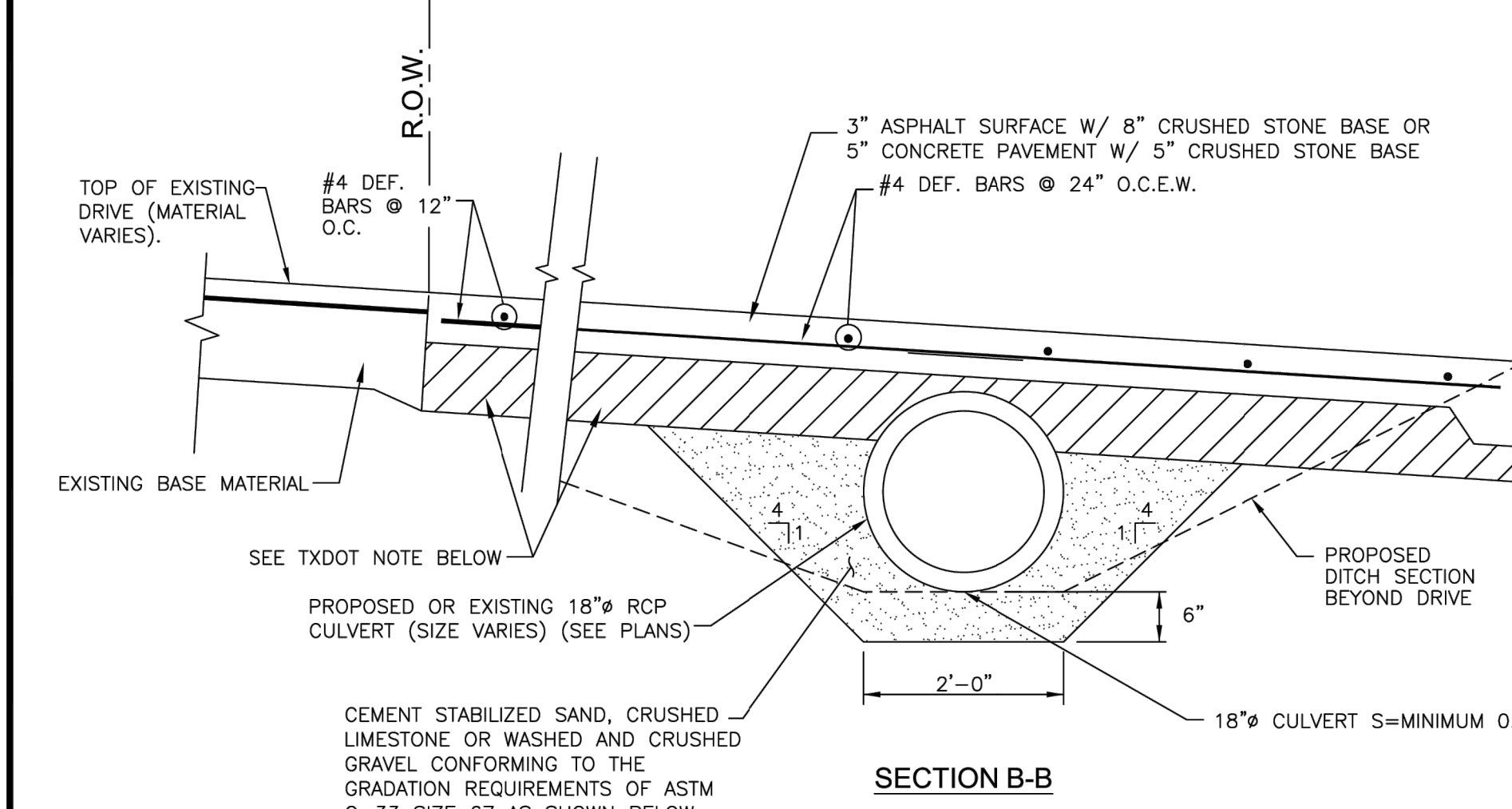
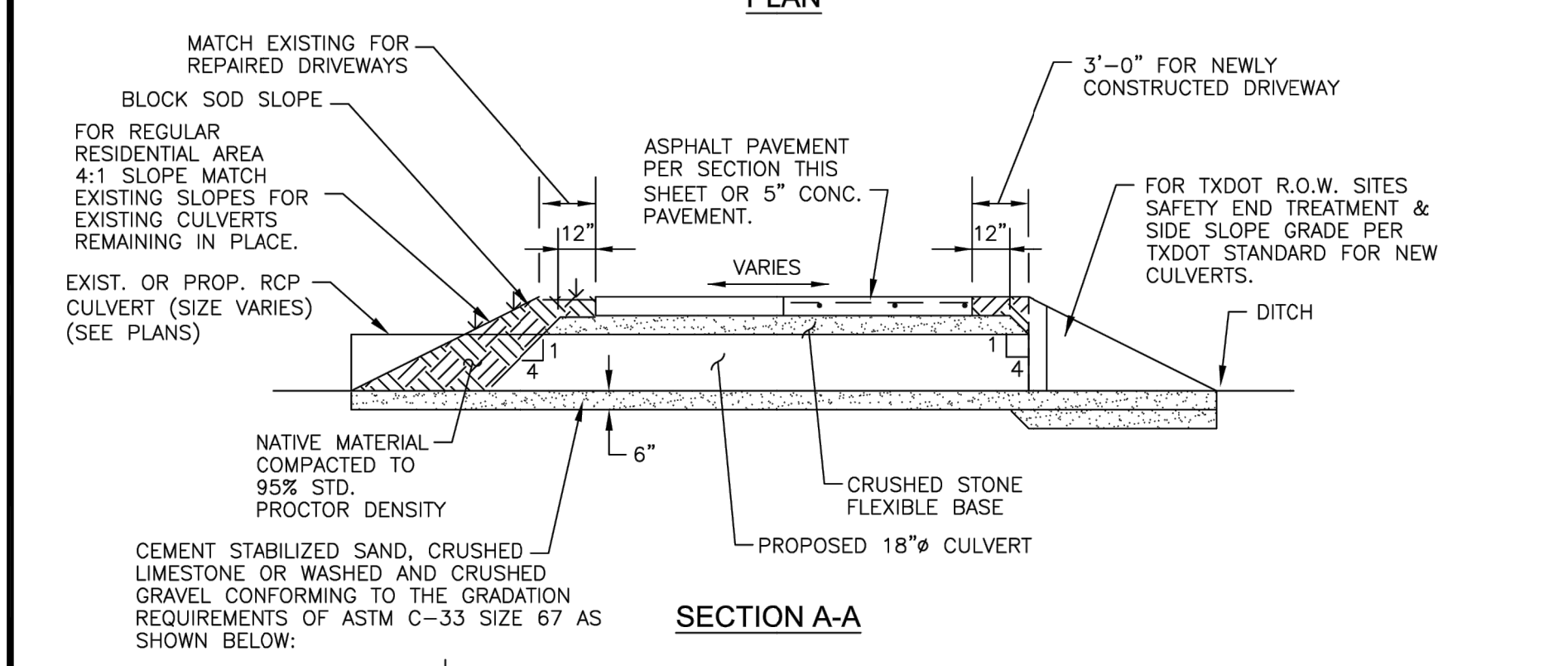
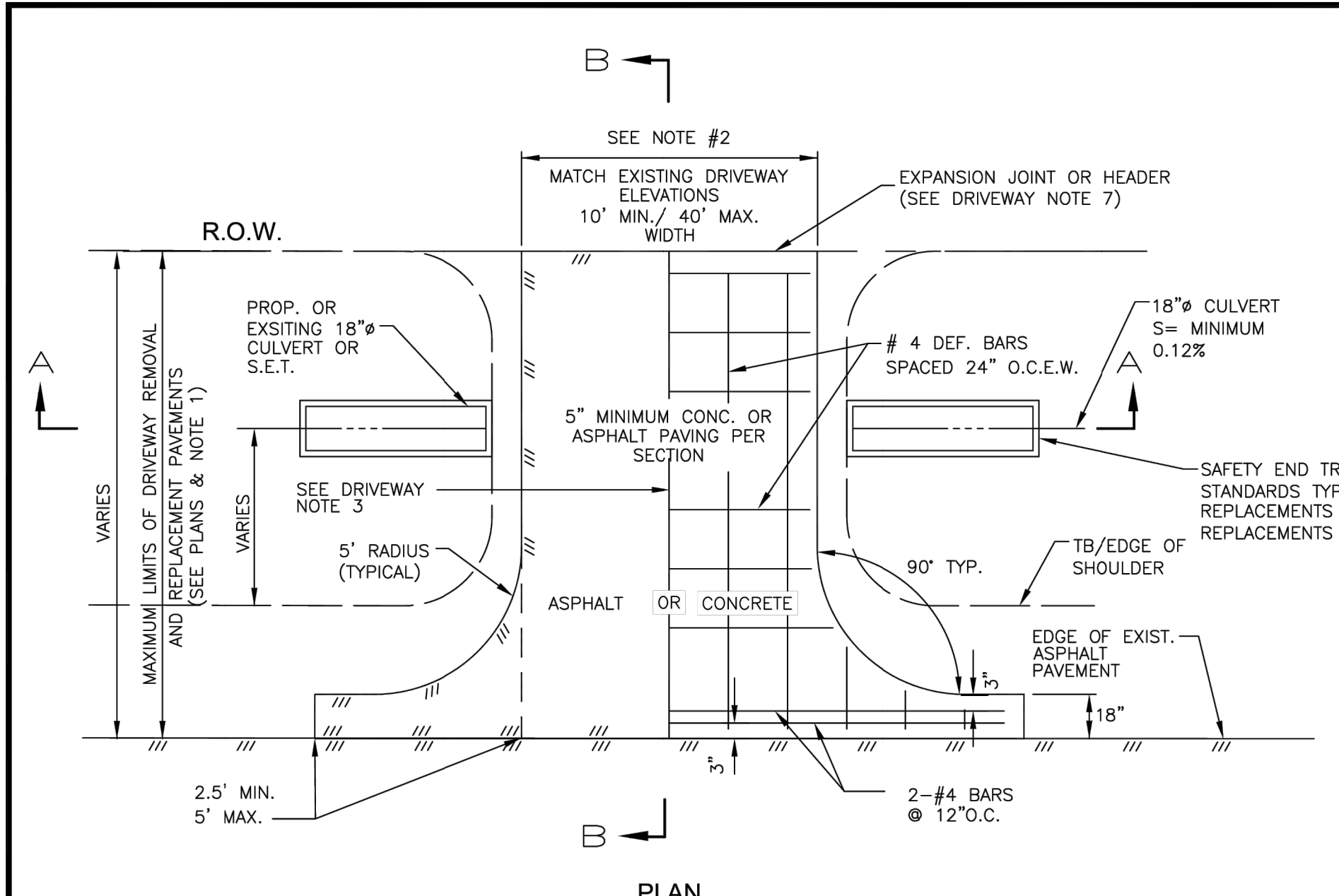


**PLAN - THRUST BLOCK AT 90° BEND**

BY		DATE	REVISIONS	No.
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KHA PROJECT	067785106	DATE	AUGUST 2025	SCALE AS SHOWN
DESIGNED BY:	VGB	DRAWN BY:	NMT	CHECKED BY:
<b>CITY OF GALVESTON          UTMB EST          REHABILITATION</b>				
<b>CONSTRUCTION          DETAILS (3 OF 5)</b>				
SHEET NUMBER <b>C-13</b>				

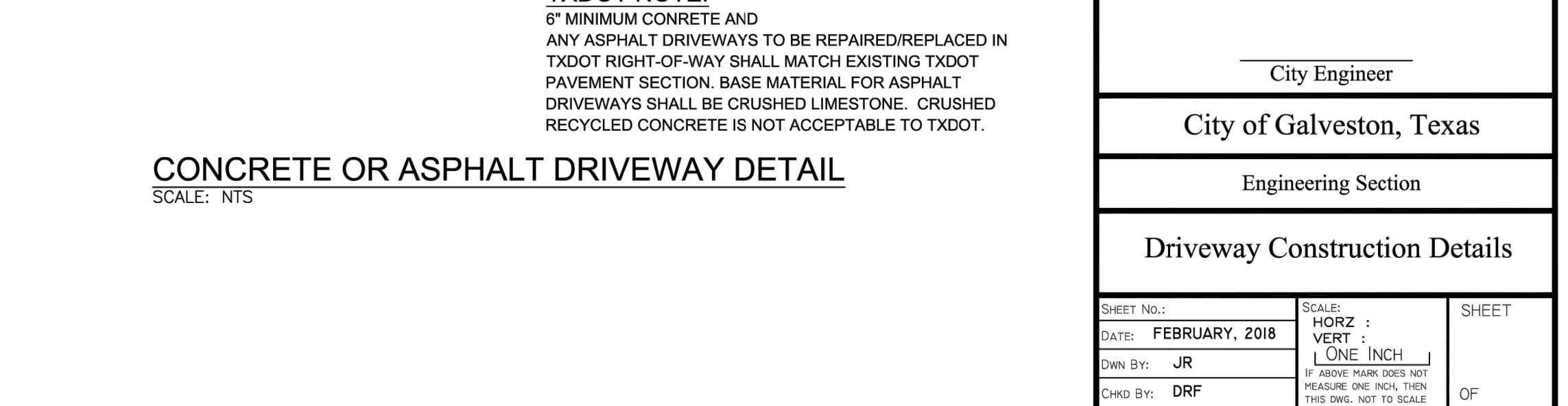
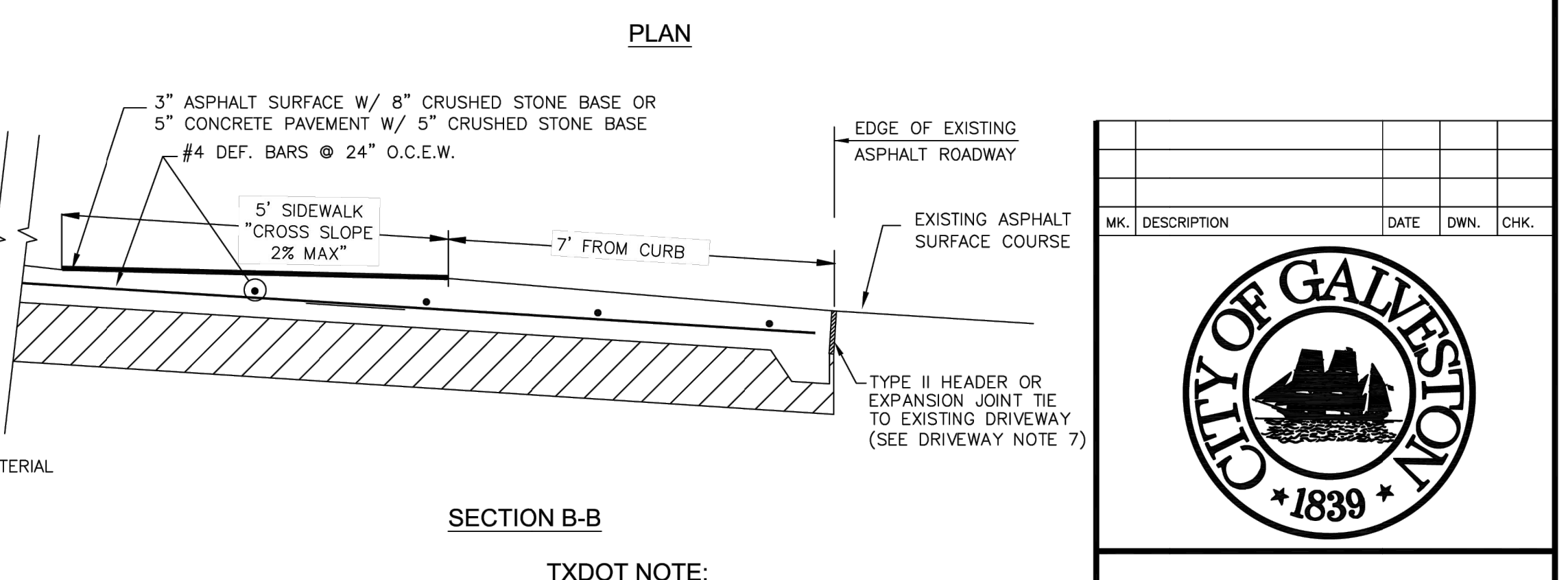
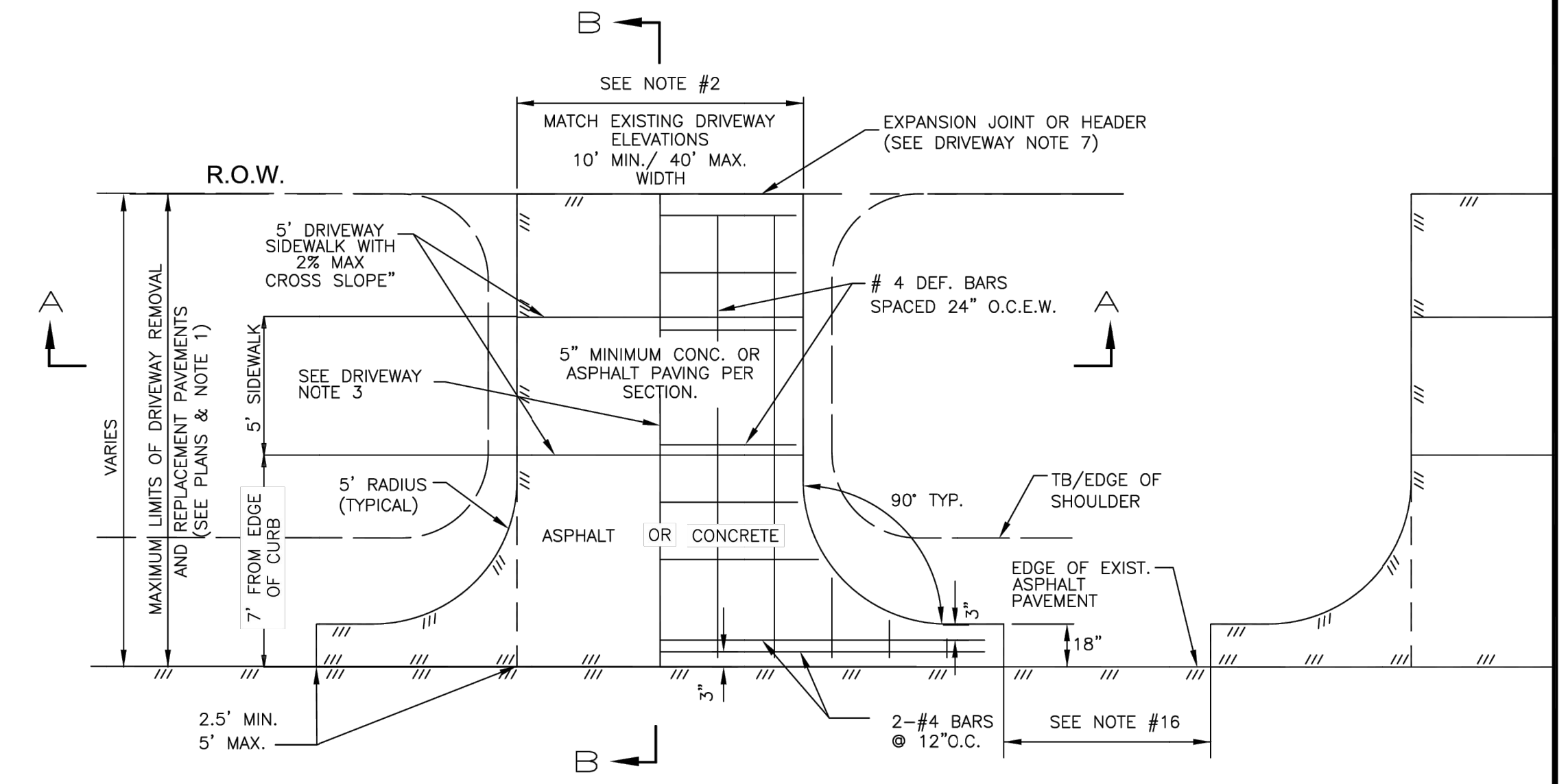
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**DRIVEWAY NOTES:**

- IN THE EVENT TOTAL DRIVEWAY AND/OR CULVERT REMOVAL & REPLACEMENT IS REQUIRED, IT SHALL BE DONE PER DETAILS ON THIS SHEET. ASPHALT DRIVEWAYS IN TXDOT R.O.W. SHALL MATCH TXDOT PAVEMENT SECTION.
- THE MAXIMUM LIMIT OF DRIVEWAY REMOVAL AND REPLACEMENT SHALL BE LOCATED AT THE RIGHT-OF-WAY UNLESS OTHERWISE DIRECTED BY THE CITY ENGINEER (SEE NOTE 7).
- DRIVEWAYS SHALL BE CONSTRUCTED TO MATCH EXISTING DRIVEWAY WIDTH MEASURED AT THE RIGHT-OF-WAY TO A MAXIMUM WIDTH OF 40'-0". WHEN DRIVEWAY EXCEEDS 20'-0" IN WIDTH, A 3/4" REDWOOD BOARD EXPANSION JOINT W/ STEEL RUNNING THROUGH IT, OR APPROVED EQUAL, SHALL BE INSTALLED THE FULL LENGTH OF THE DRIVEWAY. EXCEPTIONS WILL BE MADE ON A CASE BY CASE BASIS BY CITY ENGINEER'S OFFICE.
- PROPOSED DRIVEWAY FINISH SURFACE MATERIAL SHALL MATCH EXISTING MATERIALS SUCH AS PEA GRAVEL, INLAID BRICK, STAMPED OR COLORED CONCRETE, EXISTING ASPHALT, SHELL, SHELLCRETE, DIRT, GRAVEL OR GRASS DRIVEWAYS SHALL BE REPAIRED IN KIND AS REQUIRED UNLESS OTHERWISE SHOWN ON PLANS. ASPHALT DRIVEWAYS SHALL BE REPAIRED PER PROPOSED PAVEMENT REPLACEMENT SECTION.
- DRIVEWAYS SHALL BE MATCHED TO STREET PAVEMENT ELEVATIONS.
- NATIVE MATERIALS SHALL BE USED AS A BASE LEVELER AND /OR AS BACKFILL REQUIRED WHEN OVER EXCAVATION OCCURS DUE TO POOR SOILS OR ANY OTHER CONDITION RESULTING IN OVER EXCAVATION OF DRIVEWAYS. NATIVE MATERIALS SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY.
- WHERE TYING INTO EXISTING CONCRETE DRIVEWAY AND CONDITION OF EXISTING DRIVEWAY ALLOWS, PROVIDE 1x4" REDWOOD BOARD W/24" LONG #4 DEFORMED BARS @ 12" O.C.E.W. THROUGH IT DRILLED INTO EXISTING DRIVEWAY. WHERE EXISTING CONCRETE IS IN POOR CONDITION PROVIDE TYPE II PAVING HEADER (DRIVEWAYS ONLY).
- FILL AT CULVERTS SHALL BE CONTROLLED BY 4H:1V SLOPE RATHER THAN DRIVEWAY SHOULDER WIDTH TO MINIMIZE AMOUNT OF CULVERT PIPE EXPOSED. FOR DRIVEWAYS IN FM3005 R.O.W., SLOPES SHALL CONFORM TO TXDOT STANDARDS. (SEE NOTE 9)
- IN THE EVENT TOTAL CULVERT REMOVAL IS REQUIRED, SAFETY END TREATMENTS SHALL BE REPLACED OR ADDED PER TXDOT STANDARDS IF NONE EXISTED AT NO SEPARATE PAY. (APPLICABLE TO DRIVEWAYS IN TXDOT R.O.W. ONLY)
- DOWELS FOR PAVEMENT EXPANSION JOINTS SHALL BE 1" DIA. FOR 6" PAVEMENT THICKNESS.
- ALL JOINT SEAL MATERIAL SHALL BE HOT POURED ASPHALT RUBBER OR AS APPROVED IN ACCORDANCE W/ ASTM DESIGNATION D3405.
- DEFORMED METAL STRIPS SHALL BE STAKED IN PLACE W/ #3 BARS.
- PRE-MANUFACTURED JOINT PLATE, TWO PER LOAD TRANSFER DEVICE, LOOSE FIT ON EXPANSION END AND TACK WELD TO FIXED END.
- PROVIDE 3/4" (5" THICK PAVEMENT) DIAMETER SMOOTH STEEL BAR, 20" LONG ON 12" CENTERS. END DIAMETER SMOOTH STEEL BAR, 20" LONG ON 12" CENTERS. END TREATMENT SHALL MATCH EXPANSION JOINT ADJACENT TO HEADER. WHERE THE ADJACENT EXPANSION JOINT HAS A SLIP SLEEVE ADJACENT TO HEADER, DRILL HOLE AND DRIVE DOWEL INTO EXISTING PAVEMENT. WHERE ADJACENT EXPANSION JOINT HAS A SLIP SLEEVE OPPOSITE TO THE HEADER, DRILL AND EPOXY DOWEL INTO EXISTING PAVEMENT W/"PRO-ROC" OR EQUAL, AND PROVIDE SLIP SLEEVE ON EXPOSED END. WHEN TYPE II PAVING HEADER IS ADJACENT TO PROPOSED ASPHALT PAVEMENT, PLACEMENT OF EXPANSION JOINT AND SMOOTH BAR IS NOT APPLICABLE.
- ALL PROPOSED SUBGRADE SHALL BE PROOF ROLLED. IF SOFTSPOTS OR WET SUBGRADE IS ENCOUNTERED TREAT IT WITH FLYASH TO ESTABLISH FIRM SUBGRADE.
- PROPERTIES WITH TWO DRIVEWAYS SHALL MAINTAIN A 20' MIN. DISTANCE BETWEEN FLARES AT STREET.



KHA PROJECT 067785106	DATE	08/20/2025	
	DESIGNED BY:	VGB	
SCALE AS SHOWN	DRAWN BY:	NMT	
CHECKED BY:	SJK		

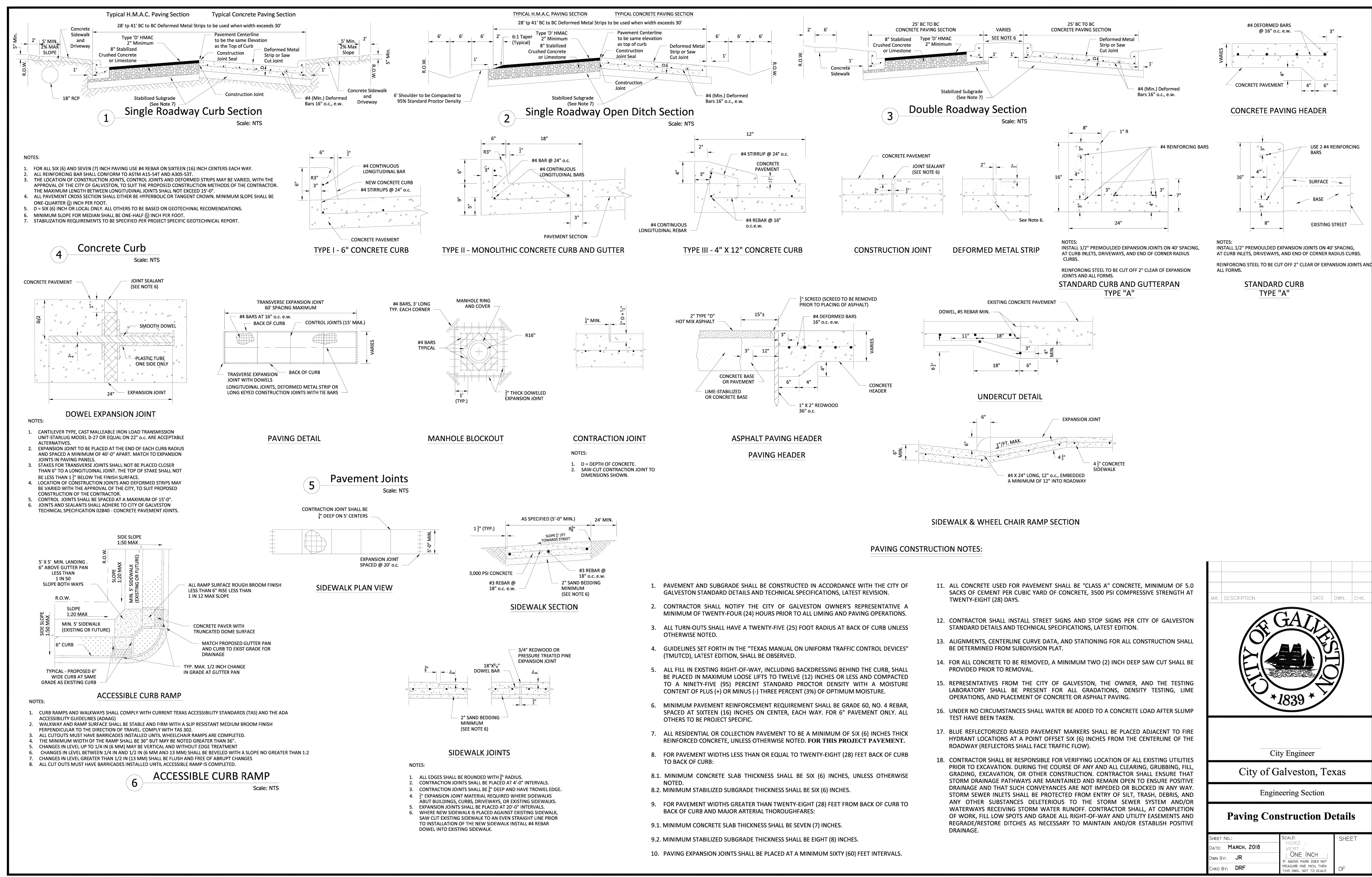
**CITY OF GALVESTON  
 UTMB EST  
 REHABILITATION**

**CONSTRUCTION  
 DETAILS (4 OF 5)**

SHEET NUMBER  
**C-14**

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**Kimley-Horn**  
STATE OF TEXAS REGISTRATION NO. F-928  
11700 KATY FREEMAN SUITE 800 HOUSTON, TX 77079  
WWW.KIMLEY-HORN.COM  
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08/20/2025  
STATE OF TEXAS  
STEPHEN J. KELLY  
127482  
KHA PROJECT: 067785106  
DATE: AUGUST 2025  
SCALE AS SHOWN  
DESIGNED BY: VGB  
DRAWN BY: NMT  
CHECKED BY: SJK

**CITY OF GALVESTON**  
UTMB EST  
REHABILITATION

**CONSTRUCTION DETAILS (5 OF 5)**

**CITY OF GALVESTON**  
1839

City Engineer  
City of Galveston, Texas  
Engineering Section  
**Paving Construction Details**

SHEET NO.:  
DATE: MARCH, 2018  
DWN BY: JR  
CHK BY: DRF

SCALE:  
HORIZ: 1" = 10'  
VERT: 1" = 1'  
ONE INCH  
IF ABOVE MARK DOES NOT MEASURE ONE INCH, THEN THIS DIM. NOT TO SCALE

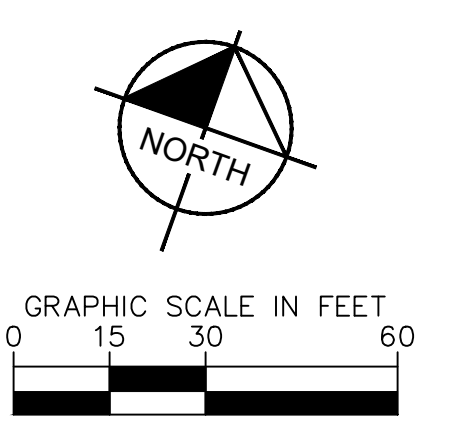
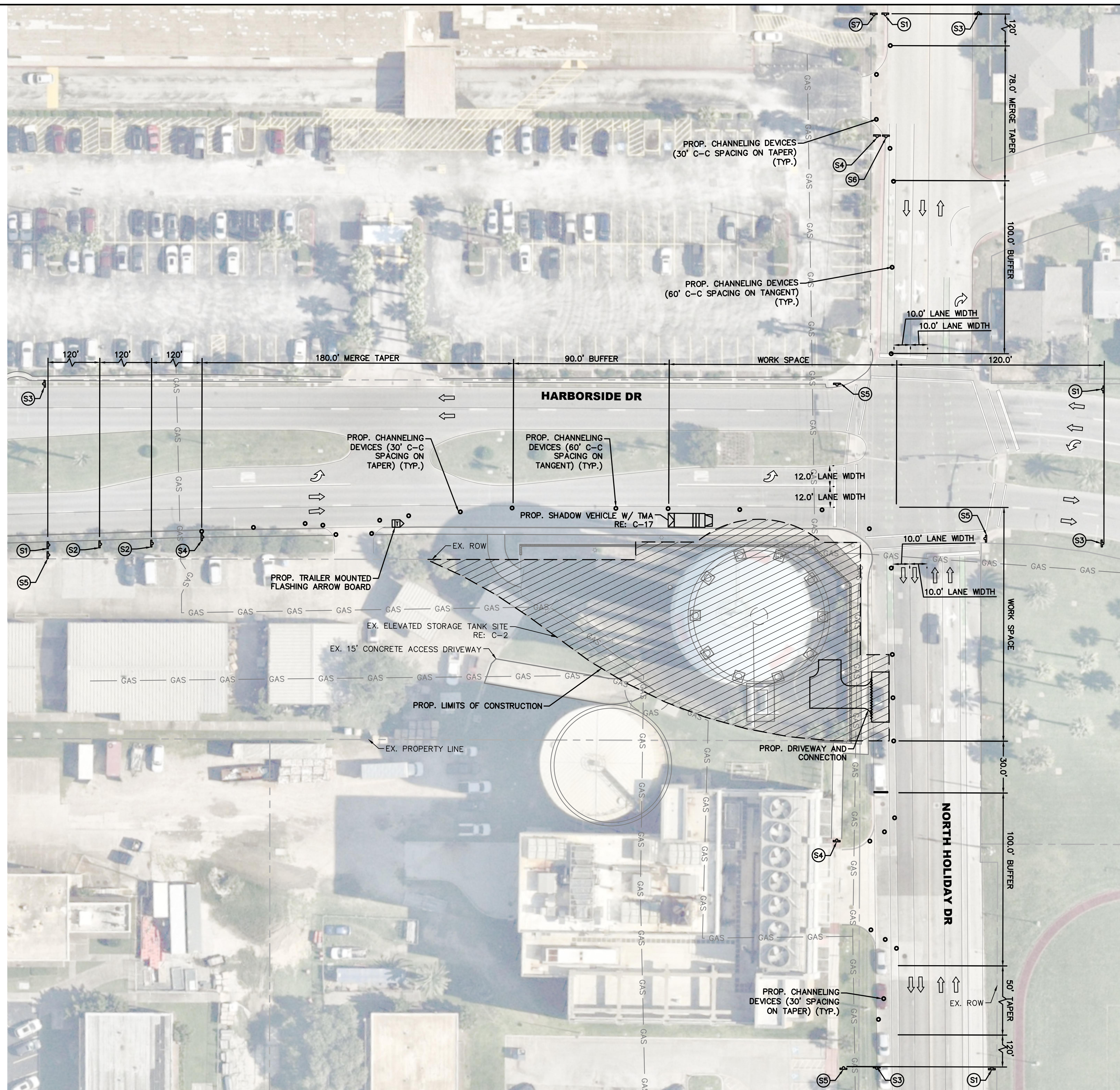
SHEET OF

**PAVING CONSTRUCTION NOTES:**

- PAVEMENT AND SUBGRADE SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF GALVESTON STANDARD DETAILS AND TECHNICAL SPECIFICATIONS, LATEST REVISION.
- CONTRACTOR SHALL NOTIFY THE CITY OF GALVESTON OWNER'S REPRESENTATIVE A MINIMUM OF TWENTY-FOUR (24) HOURS PRIOR TO ALL LIMING AND PAVING OPERATIONS.
- ALL TURN-OUTS SHALL HAVE A TWENTY-FIVE (25) FOOT RADIUS AT BACK OF CURB UNLESS OTHERWISE NOTED.
- GUIDELINES SET FORTH IN THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (TMUTCD), LATEST EDITION, SHALL BE OBSERVED.
- ALL FILL IN EXISTING RIGHT-OF-WAY, INCLUDING BACKDRESSING BEHIND THE CURB, SHALL BE PLACED IN MAXIMUM LOOSE LIFTS TO TWELVE (12) INCHES OR LESS AND COMPACTED TO A NINETY-FIVE (95) PERCENT STANDARD PROCTOR DENSITY WITH A MOISTURE CONTENT OF PLUS (+) OR MINUS (-) THREE PERCENT (3%) OF OPTIMUM MOISTURE.
- MINIMUM PAVEMENT REINFORCEMENT REQUIREMENT SHALL BE GRADE 60, NO. 4 REBAR, SPACED AT SIXTEEN (16) INCHES ON CENTER, EACH WAY. FOR 6" PAVEMENT ONLY. ALL OTHERS TO BE PROJECT SPECIFIC.
- ALL RESIDENTIAL OR COLLECTION PAVEMENT TO BE A MINIMUM OF SIX (6) INCHES THICK REINFORCED CONCRETE, UNLESS OTHERWISE NOTED. **FOR THIS PROJECT PAVEMENT.**
- FOR PAVEMENT WIDTHS LESS THAN OR EQUAL TO TWENTY-EIGHT (28) FEET BACK OF CURB TO BACK OF CURB:
  - MINIMUM CONCRETE SLAB THICKNESS SHALL BE SIX (6) INCHES, UNLESS OTHERWISE NOTED.
  - MINIMUM STABILIZED SUBGRADE THICKNESS SHALL BE SIX (6) INCHES.
- FOR PAVEMENT WIDTHS GREATER THAN TWENTY-EIGHT (28) FEET FROM BACK OF CURB TO BACK OF CURB AND MAJOR ARTERIAL THOROUGHFARES:
  - MINIMUM CONCRETE SLAB THICKNESS SHALL BE SEVEN (7) INCHES.
  - MINIMUM STABILIZED SUBGRADE THICKNESS SHALL BE EIGHT (8) INCHES.
- PAVING EXPANSION JOINTS SHALL BE PLACED AT A MINIMUM SIXTY (60) FEET INTERVALS.
- ALL CONCRETE USED FOR PAVEMENT SHALL BE "CLASS A" CONCRETE, MINIMUM OF 5.0 SACKS OF CEMENT PER CUBIC YARD OF CONCRETE, 3500 PSI COMPRESSIVE STRENGTH AT TWENTY-EIGHT (28) DAYS.
- CONTRACTOR SHALL INSTALL STREET SIGNS AND STOP SIGNS PER CITY OF GALVESTON STANDARD DETAILS AND TECHNICAL SPECIFICATIONS, LATEST EDITION.
- ALIGNMENTS, CENTERLINE CURVE DATA, AND STATIONING FOR ALL CONSTRUCTION SHALL BE DETERMINED FROM SUBDIVISION PLAT.
- FOR ALL CONCRETE TO BE REMOVED, A MINIMUM TWO (2) INCH DEEP SAW CUT SHALL BE PROVIDED PRIOR TO REMOVAL.
- REPRESENTATIVES FROM THE CITY OF GALVESTON, THE OWNER, AND THE TESTING LABORATORY SHALL BE PRESENT FOR ALL GRADATIONS, DENSITY TESTING, LIME OPERATIONS, AND PLACEMENT OF CONCRETE OR ASPHALT PAVING.
- UNDER NO CIRCUMSTANCES SHALL WATER BE ADDED TO A CONCRETE LOAD AFTER SLUMP TEST HAVE BEEN TAKEN.
- BLUE REFLECTORIZED RAISED PAVEMENT MARKERS SHALL BE PLACED ADJACENT TO FIRE HYDRANT LOCATIONS AT A POINT OFFSET SIX (6) INCHES FROM THE CENTERLINE OF THE ROADWAY (REFLECTORS SHALL FACE TRAFFIC FLOW).
- CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING LOCATION OF ALL EXISTING UTILITIES PRIOR TO EXCAVATION. DURING THE COURSE OF ANY AND ALL CLEARING, GRUBBING, FILL, GRADING, EXCAVATION, OR OTHER CONSTRUCTION, CONTRACTOR SHALL ENSURE THAT STORM DRAINAGE PATHWAYS ARE MAINTAINED AND REMAIN OPEN TO ENSURE POSITIVE DRAINAGE AND THAT SUCH CONVEYANCES ARE NOT IMPEDED OR BLOCKED IN ANY WAY. STORM SEWER INLETS SHALL BE PROTECTED FROM ENTRY OF SILT, TRASH, DEBRIS, AND ANY OTHER SUBSTANCES DELETERIOUS TO THE STORM SEWER SYSTEM AND/OR WATERWAYS RECEIVING STORM WATER RUNOFF. CONTRACTOR SHALL, AT COMPLETION OF WORK, FILL LOW SPOTS AND GRADE ALL RIGHT-OF-WAY AND UTILITY EASEMENTS AND REGRADE/RESTORE DITCHES AS NECESSARY TO MAINTAIN AND/OR ESTABLISH POSITIVE DRAINAGE.

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**TRAFFIC CONTROL PLAN NOTES**

1. TRAFFIC CONTROL PLAN DESIGN SPEED IS ASSUMED TO BE 30 MPH.
2. CONTRACTOR SHALL PROVIDE A TRAFFIC CONTROL PLAN AND SEQUENCING PLAN FOR OWNER AND ENGINEER REVIEW AND ACCEPTANCE PRIOR TO CONSTRUCTION. MODIFICATIONS TO THE TRAFFIC CONTROL PLAN BY CONTRACTOR SHALL BE SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS.
3. CONTRACTOR SHALL MAINTAIN ACCESS TO ADJACENT PROPERTIES AT ALL TIMES. NO SEPARATE PAY ITEM.
4. FLAGS ATTACHED TO SIGNS WHERE SHOWN ARE REQUIRED.
5. CONTRACTOR SHALL PLACE "SIDEWALK CLOSED AHEAD. CROSS HERE" SIGN AT NEAREST CROSSING LOCATION PRIOR TO CONSTRUCTION ZONE.

**LEGEND**

- PROP. CHANNELING DEVICES
- ▼ PROP. TEMPORARY CONSTRUCTION SIGN
- ▶ PROP. TRAILER MOUNTED FLASHING ARROW BOARD
- ▭ PROP. SHADOW VEHICLE WITH TMA
- PROP. TYPE 3 BARRICADE
- ➔ TRAFFIC FLOW DIRECTION

**SIGN LEGEND**

S1		CW20-1D 48" X 48" (SEE NOTE 4)
S2		CW20-5TR 48" X 48" CW16-3oP 24" X 12" XXX FT
S3		G20-2 48" X 24"
S4		R9-9 24" X 12"
S5		R9-11 24" X 12" (SEE NOTE 5)
S6		R3-17 24" X 18" R3-17bP 24" X 8"
S7		R3-17 24" X 18" R3-17bP 24" X 8" R3-17oP 24" X 8"

KHA PROJECT 067785106	DATE AUGUST 2025	SCALE AS SHOWN	DESIGNED BY: NMT	DRAWN BY: NMT	CHECKED BY: AMP
<b>CITY OF GALVESTON UTMB EST REHABILITATION</b>					
<b>TRAFFIC CONTROL PLAN</b>					
SHEET NUMBER <b>C-16</b>					

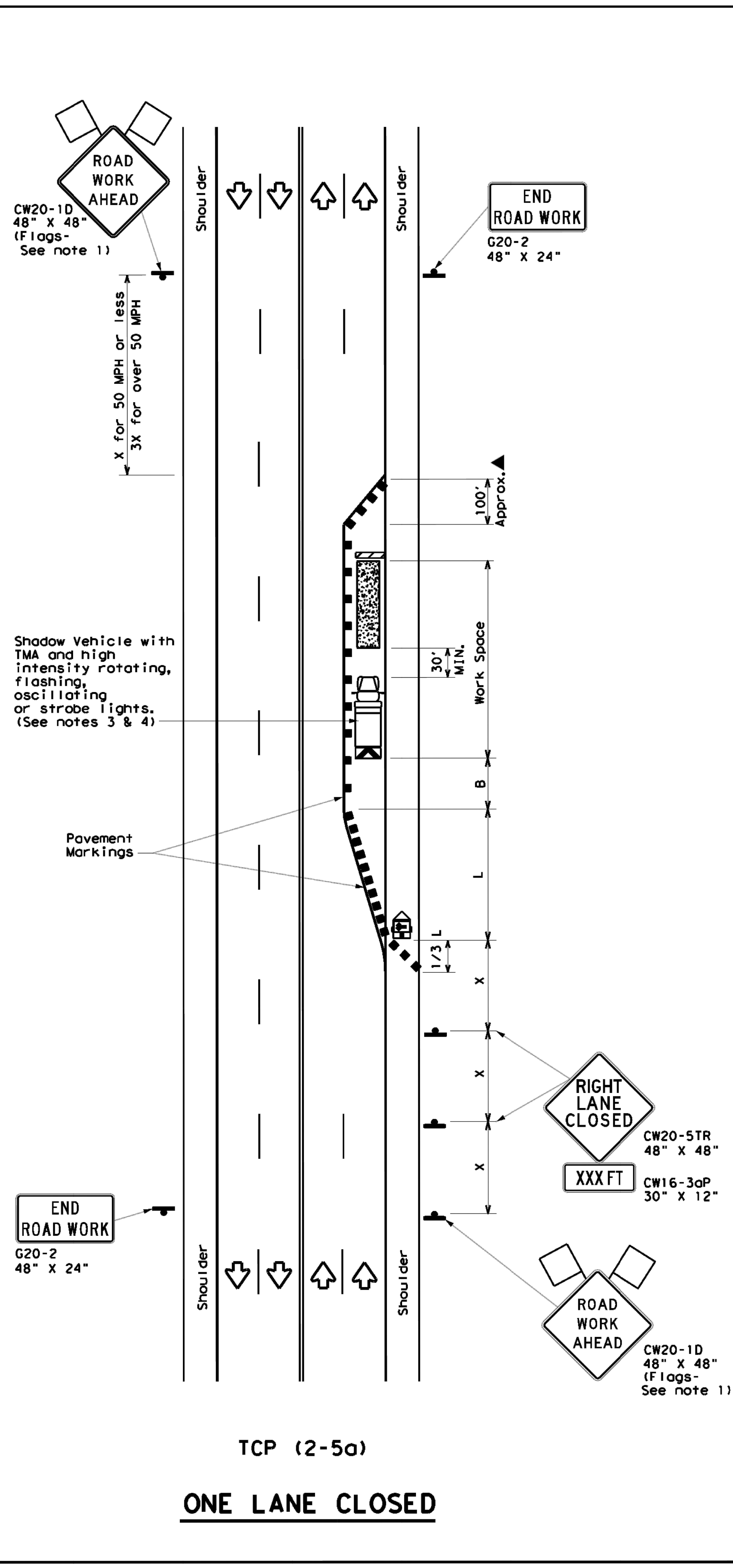
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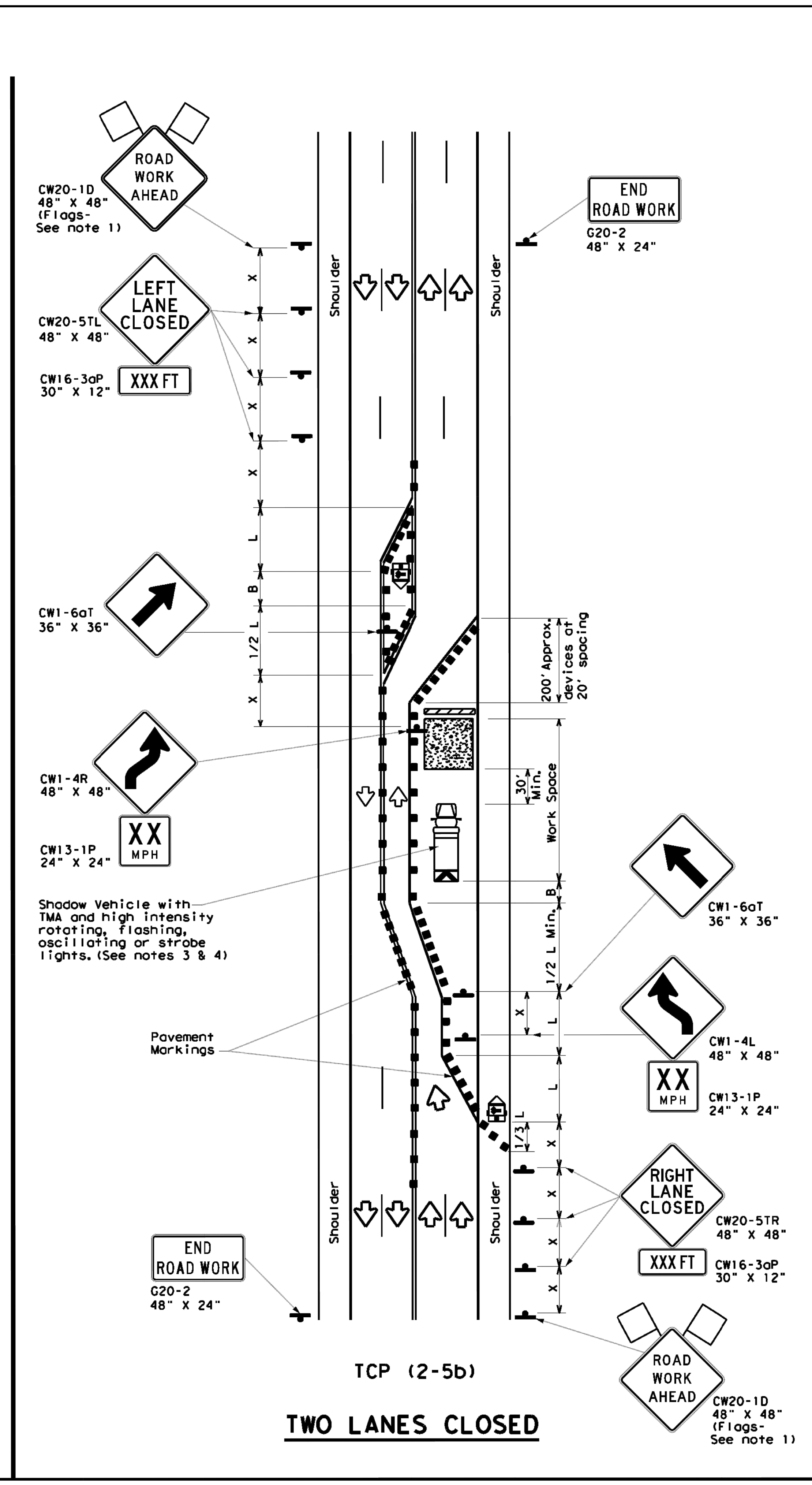
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**TCP (2-5a)**  
**ONE LANE CLOSED**



**TCP (2-5b)**  
**TWO LANES CLOSED**

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "x" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	L = WS ² / 60	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L = WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only  
 ** Taper lengths have been rounded off.  
 L=Length of Taper (FT) W=Width of Offset (FT) S=Posted Speed (MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
			✓	✓

- GENERAL NOTES**
- Flags attached to signs where shown, are REQUIRED.
  - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
  - A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
  - Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.
  - The downstream taper is optional. When used, it should be 100 feet approximately per lane, with channelizing devices spaced at 20 feet.
- TCP (2-5a)**
- If this TCP is used for a left lane closure, CW20-5TL "LEFT LANE CLOSED" signs shall be used and channelizing devices shall be placed on the centerline to protect the work space from opposing traffic, with the arrow board placed in the closed lane near the end of the merging taper.
- TCP (2-5b)**
- Conflicting pavement markings shall be removed for long-term projects.

**Texas Department of Transportation**  
 Traffic Operations Division Standard

**TRAFFIC CONTROL PLAN**  
**LONG TERM LANE CLOSURES**  
**MULTILANE CONVENTIONAL RDS.**

**TCP (2-5) - 18**

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8-95 2-12 REVISIONS				
1-97 3-03	DIST	COUNTY	SHEET NO.	
4-98 2-18				

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01/06/2025  
 Abbey Polzin  
 Professional Engineer

KHA PROJECT: 067785106  
 DATE: AUGUST 2025  
 SCALE: AS SHOWN  
 DESIGNED BY: NMT  
 DRAWN BY: NMT  
 CHECKED BY: AMP

**CITY OF GALVESTON**  
**UTMB EST**  
**REHABILITATION**

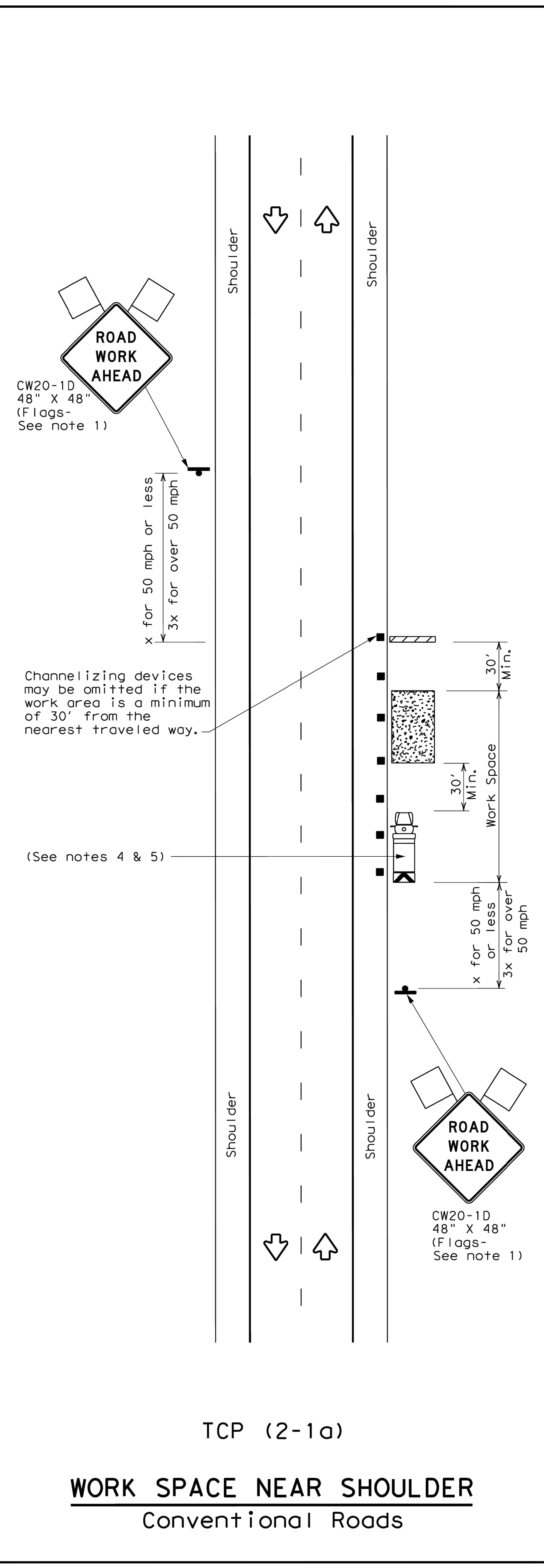
**TRAFFIC CONTROL**  
**DETAILS (1 OF 14)**

SHEET NUMBER  
**C-17**

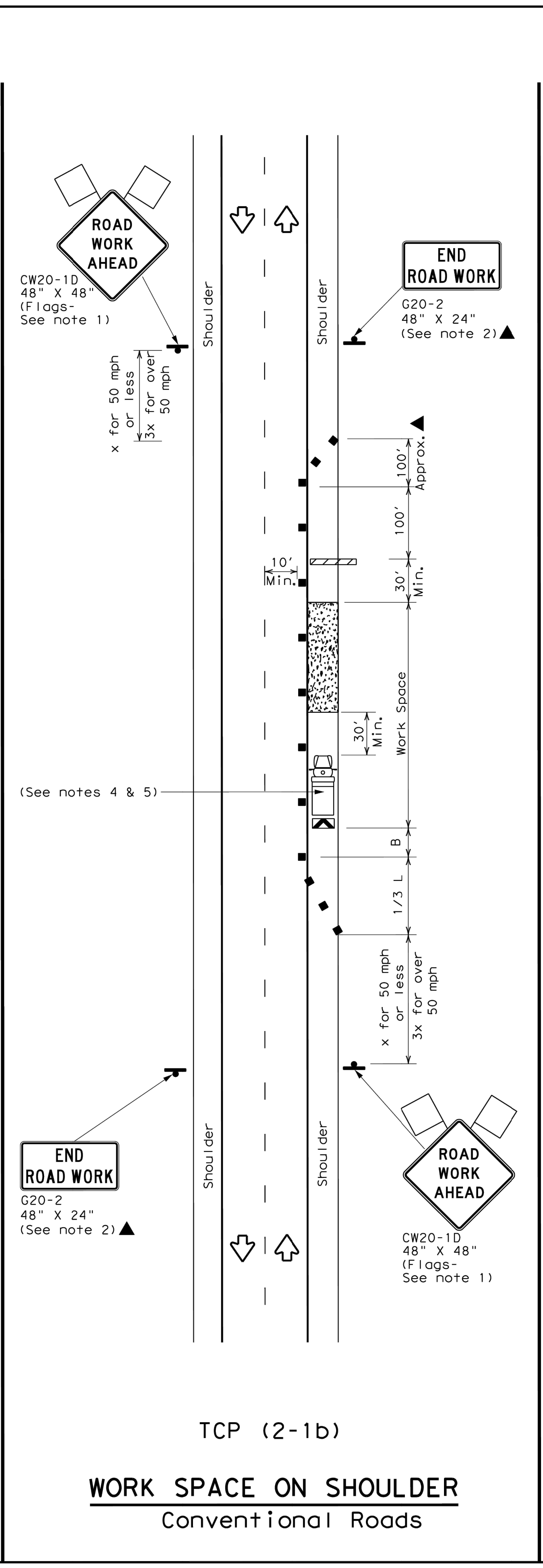
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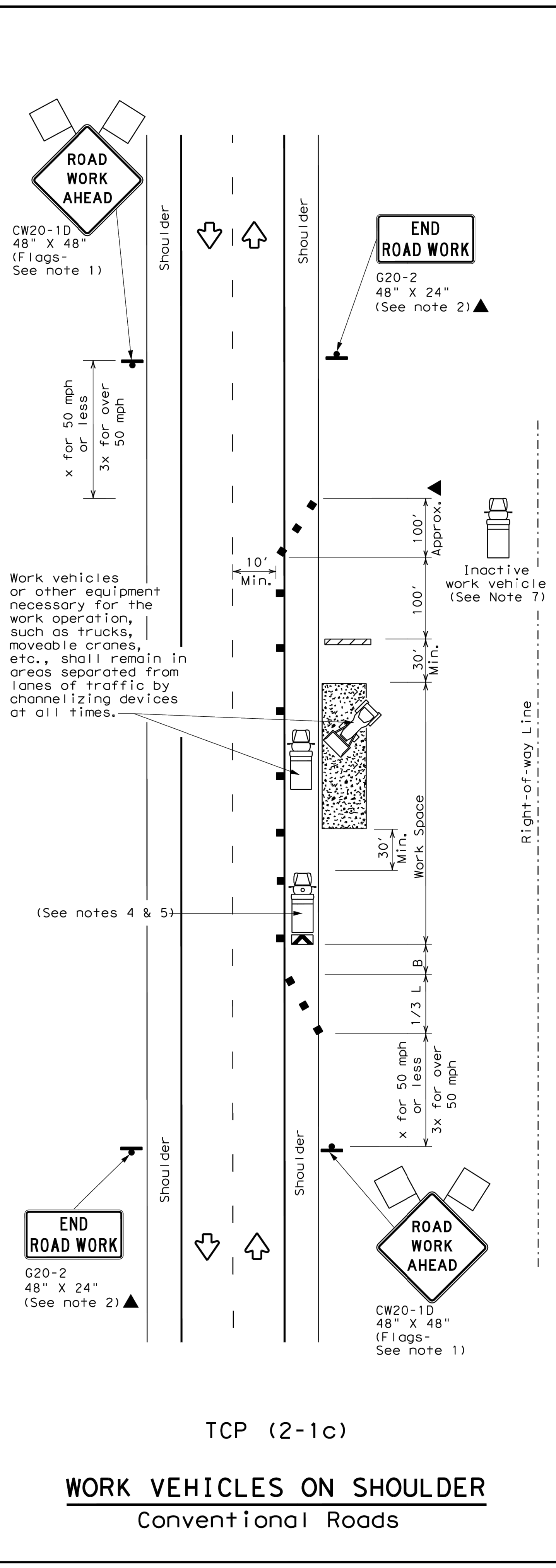
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TCP (2-1a)  
**WORK SPACE NEAR SHOULDER**  
 Conventional Roads



TCP (2-1b)  
**WORK SPACE ON SHOULDER**  
 Conventional Roads



TCP (2-1c)  
**WORK VEHICLES ON SHOULDER**  
 Conventional Roads

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L = WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only  
 ** Taper lengths have been rounded off.  
 L=Length of Taper (FT) W=Width of Offset (FT) S=Posted Speed (MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
✓	✓	✓	✓	✓

- GENERAL NOTES**
- Flags attached to signs where shown, are REQUIRED.
  - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated in the plans, or for routine maintenance work, when approved by the Engineer.
  - Stockpiled material should be placed a minimum of 30 feet from nearest traveled way.
  - Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
  - Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.
  - See TCP(5-1) for shoulder work on divided highways, expressways and freeways.
  - Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
  - CW21-5 "SHOULDER WORK" signs may be used in place of CW21-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.



**TRAFFIC CONTROL PLAN**  
**CONVENTIONAL ROAD**  
**SHOULDER WORK**

**TCP (2-1) - 18**

FILE: tcp2-1-18.dgn	DN: December 1985	CK: JOB	DW: HIGHWAY	CK: SHEET NO.
REVISIONS				
2-94 4-98				
8-95 2-12				
1-97 2-18				

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<b>CITY OF GALVESTON</b>					
<b>UTMB EST</b>					
<b>REHABILITATION</b>					
<b>TRAFFIC CONTROL</b>					
<b>DETAILS (2 OF 14)</b>					
SHEET NUMBER					
<b>C-18</b>					

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**BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:**

- The Barricade and Construction Standard Sheets (BC sheets) are intended to show typical examples for placement of temporary traffic control devices, construction pavement markings, and typical work zone signs. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
- The development and design of the Traffic Control Plan (TCP) is the responsibility of the Engineer.
- The Contractor may propose changes to the TCP that are signed and sealed by a licensed professional engineer for approval. The Engineer may develop, sign and seal Contractor proposed changes.
- The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the approximate location of any device without the approval of the Engineer.
- Geometric design of lane shifts and detours should, when possible, meet the applicable design criteria contained in manuals such as the American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets," the TxDOT "Roadway Design Manual" or engineering judgment.
- When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor shall erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.
- The Engineer may require duplicate warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.
- All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.
- The temporary traffic control devices shown in the illustrations of the BC sheets are examples. As necessary, the Engineer will determine the most appropriate traffic control devices to be used.
- Where highway construction or maintenance work is being undertaken, other than mobile operations as defined by the Texas Manual on Uniform Traffic Control Devices, CSJ limit signs are required. CSJ limit signs are shown on BC(2). The OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits. For mobile operations, CSJ limit signs are not required.
- Traffic control devices should be in place only while work is actually in progress or a definite need exists.
- The Engineer has the final decision on the location of all traffic control devices.
- Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

**WORKER SAFETY NOTES:**


- Workers on foot who are exposed to traffic or to construction equipment within the right-of-way shall wear high-visibility safety apparel meeting the requirements of ISEA "American National Standard for High-Visibility Apparel," or equivalent revisions, and labeled as ANSI 107-2004 standard performance for Class 2 or 3 risk exposure. Class 3 garments should be considered for high traffic volume work areas or night time work.
- Except in emergency situations, flagger stations shall be illuminated when flagging is used at night.

**COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES**

- Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources.
- Work zone traffic control devices shall be compliant with the Manual for Assessing safety Hardware (MASH).

<p><b>THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT</b>  <a href="http://www.txdot.gov">http://www.txdot.gov</a></p>
COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD)
DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS)
MATERIAL PRODUCER LIST (MPL)
ROADWAY DESIGN MANUAL - SEE "MANUALS (ONLINE MANUALS)"
STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS (SHSD)
TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD)
TRAFFIC ENGINEERING STANDARD SHEETS

SHEET 1 OF 12

		<b>Traffic Safety Division Standard</b>			
<p><b>BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS</b></p> <p><b>BC (1) - 21</b></p>					
FILE#	bc-21.dgn	DN# TxDOT	CK# TxDOT	DW# TxDOT	CK# TxDOT
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY
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9-07	8-14				
5-10	5-21				
		DIST	COUNTY		SHEET NO.

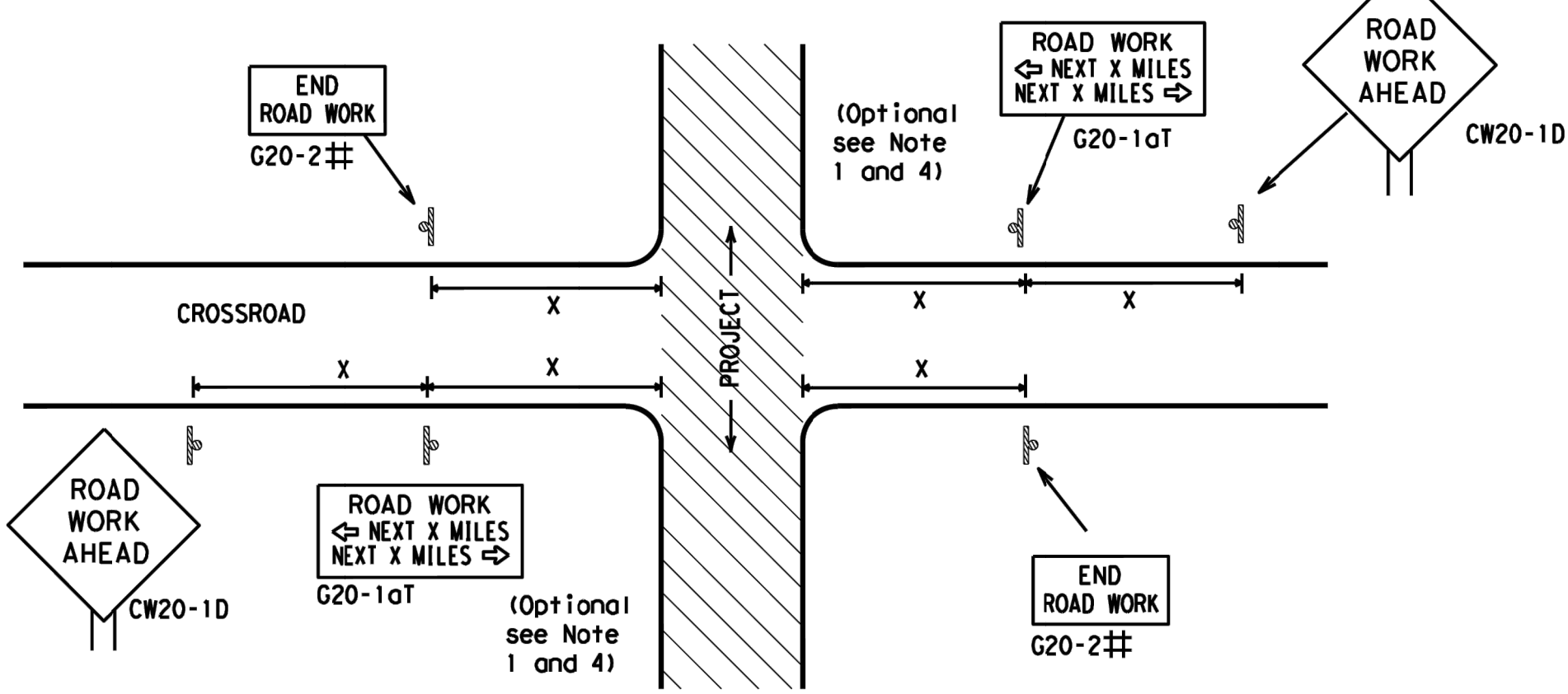
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**UTMB EST**  
**REHABILITATION**  
  
**TRAFFIC CONTROL**  
**DETAILS (3 OF 14)**  
  
 SHEET NUMBER  
**C-19**


<p>01/06/2025</p>

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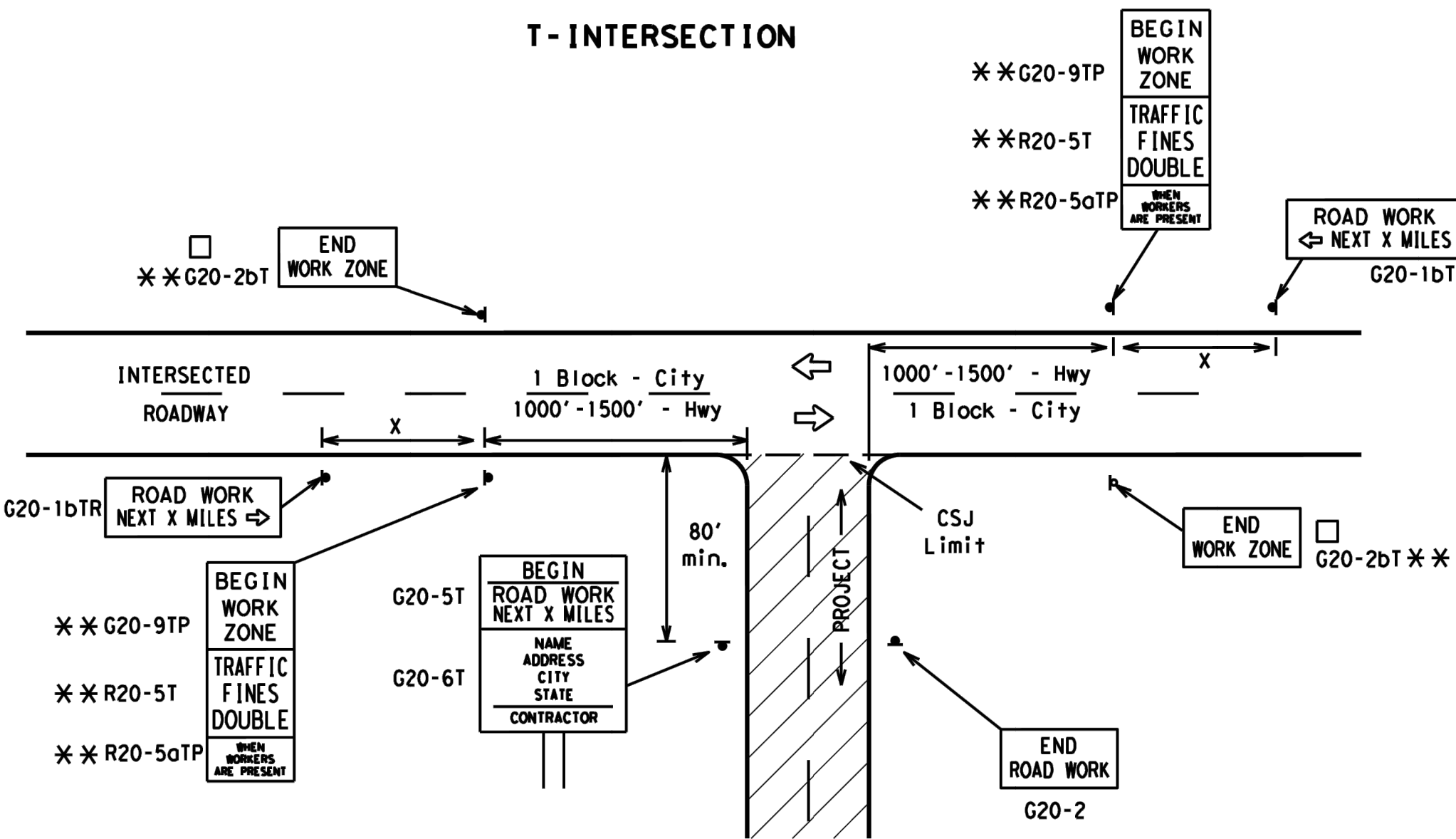
**TYPICAL LOCATION OF CROSSROAD SIGNS**



## May be mounted on back of "ROAD WORK AHEAD" (CW20-1D) sign with approval of Engineer. (See note 2 below)

- The typical minimum signing on a crossroad approach should be a "ROAD WORK AHEAD" (CW20-1D) sign and a (G20-2) "END ROAD WORK" sign, unless noted otherwise in plans.
- The Engineer may use the reduced size 36" x 36" ROAD WORK AHEAD (CW20-1D) sign mounted back to back with the reduced size 36" x 18" "END ROAD WORK" (G20-2) sign on low volume crossroads (see Note 4 under "Typical Construction Warning Sign Size and Spacing"). See the "Standard Highway Sign Designs for Texas" manual for sign details. The Engineer may omit the advance warning signs on low volume crossroads. The Engineer will determine whether a road is low volume as per TMUTCD Part 5. This information shall be shown in the plans.
- Based on existing field conditions, the Engineer/Inspector may require additional signs such as FLAGGER AHEAD, LOOSE GRAVEL, or other appropriate signs. When additional signs are required, these signs will be considered part of the minimum requirements. The Engineer/Inspector will determine the proper location and spacing of any sign not shown on the BC sheets, Traffic Control Plan sheets or the Work Zone Standard Sheets.
- The "ROAD WORK NEXT X MILES" (G20-1aT) sign shall be required at high volume crossroads to advise motorists of the length of construction in either direction from the intersection. The Engineer will determine whether a roadway is considered high volume.
- Additional traffic control devices may be shown elsewhere in the plans for higher volume crossroads.
- When work occurs in the intersection area, appropriate traffic control devices, as shown elsewhere in the plans or as determined by the Engineer/Inspector, shall be in place.

**T-INTERSECTION**



**CSJ LIMITS AT T-INTERSECTION**

- The Engineer will determine the types and location of any additional traffic control devices, such as a flagger and accompanying signs, or other signs, that should be used when work is being performed at or near an intersection.
- If construction closes the road at a T-intersection, the Contractor shall place the "CONTRACTOR NAME" (G20-6T) sign behind the Type 3 Barricades for the road closure (see BC(10) also). The "ROAD WORK NEXT X MILES" left arrow (G20-1bTL) and "ROAD WORK NEXT X MILES" right arrow (G20-1bTR) signs shall be replaced by the detour signing called for in the plans.

**TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING^{15,6}**

Sign Number or Series	SIZE		SPACING	
	Conventional Road	Expressway/Freeway	Posted Speed	Sign Spacing "X"
CW20 ⁴	48" x 48"	48" x 48"	MPH	Feet (Approx.)
CW21			30	120
CW22			35	160
CW23			40	240
CW25	36" x 36"	48" x 48"	45	320
CW1, CW2, CW7, CW8, CW9, CW11, CW14			50	400
			55	500 ²
			60	600 ²
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12	48" x 48"	48" x 48"	65	700 ²
			70	800 ²
			75	900 ²
			80	1000 ²
	*	*	*	* ³

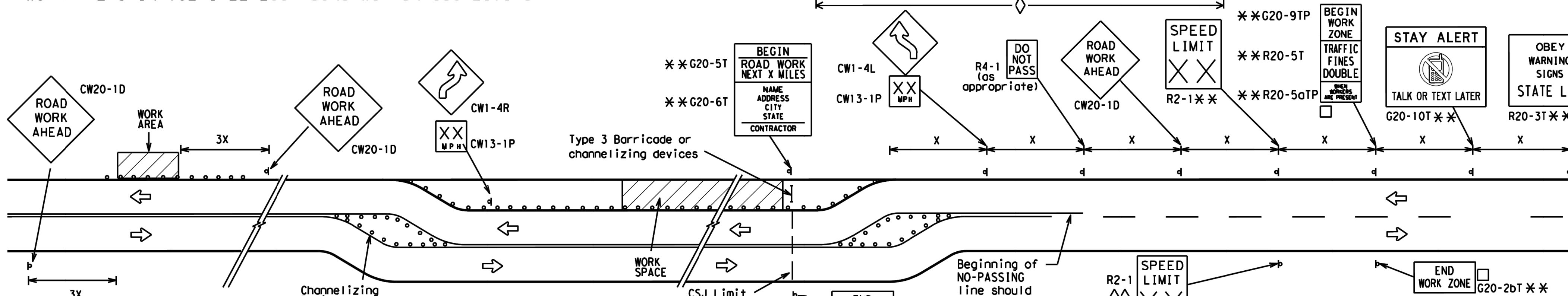
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

△ Minimum distance from work area to first Advance Warning sign nearest the work area and/or distance between each additional sign.

**GENERAL NOTES**

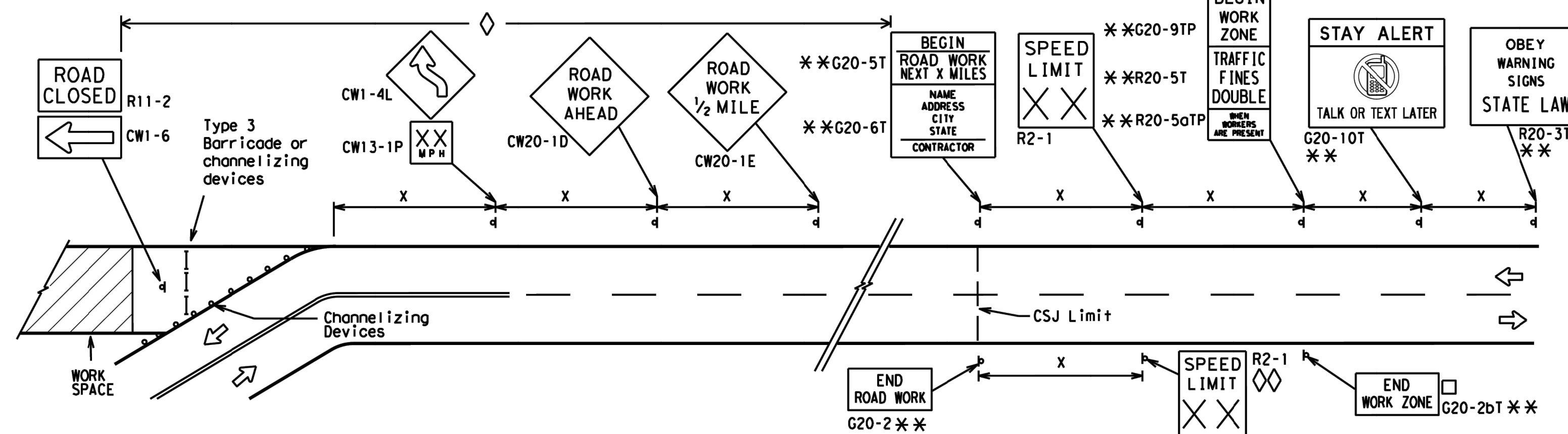
- Special or larger size signs may be used as necessary.
- Distance between signs should be increased as required to have 1500 feet advance warning.
- Distance between signs should be increased as required to have 1/2 mile or more advance warning.
- 36" x 36" "ROAD WORK AHEAD" (CW20-1D) signs may be used on low volume crossroads at the discretion of the Engineer as per TMUTCD Part 5. See Note 2 under "Typical Location of Crossroad Signs".
- Only diamond shaped warning sign sizes are indicated.
- See sign size listing in "TMUTCD", Sign Appendix or the "Standard Highway Sign Designs for Texas" manual for complete list of available sign design sizes.

**WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS**



When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD" (CW20-1D) signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing of signs and channelizing devices.

**SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING DOWNSTREAM OF THE CSJ LIMITS**



**NOTES**

- The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and "BEGIN ROAD WORK NEXT X MILES" (G20-5T) sign for each specific project. This distance shall replace the "X" and shall be rounded to the nearest whole mile with the approval of the Engineer. No decimals shall be used.
- The "BEGIN WORK ZONE" (G20-9TP) and "END WORK ZONE" (G20-2bT) shall be used as shown on the sample layout when advance signs are required outside the CSJ Limits. They inform the motorist of entering or leaving a part of the work zone lying outside the CSJ Limits where traffic fines may double if workers are present.
  - CSJ limit signing is required for highway construction and maintenance work, with the exception of mobile operations.
  - Area for placement of "ROAD WORK AHEAD" (CW20-1D) sign and other signs or devices as called for on the Traffic Control Plan.
  - Contractor will install a regulatory speed limit sign at the end of the work zone.

**LEGEND**

—	Type 3 Barricade
○ ○ ○	Channelizing Devices
■	Sign
X	See Typical Construction Warning Sign Size and Spacing chart or the TMUTCD for sign spacing requirements.

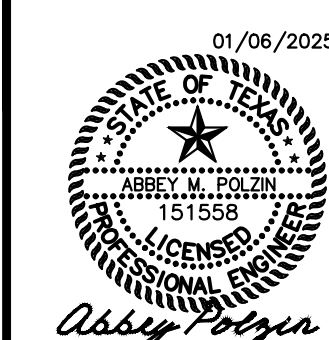
SHEET 2 OF 12



**BARRICADE AND CONSTRUCTION PROJECT LIMIT**

**BC (2) - 21**

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY	SHEET NO.	
9-07 8-14 7-13 5-21				



**CITY OF GALVESTON  
UTMB EST  
REHABILITATION**

**TRAFFIC CONTROL  
DETAILS (4 OF 14)**

SHEET NUMBER  
**C-20**

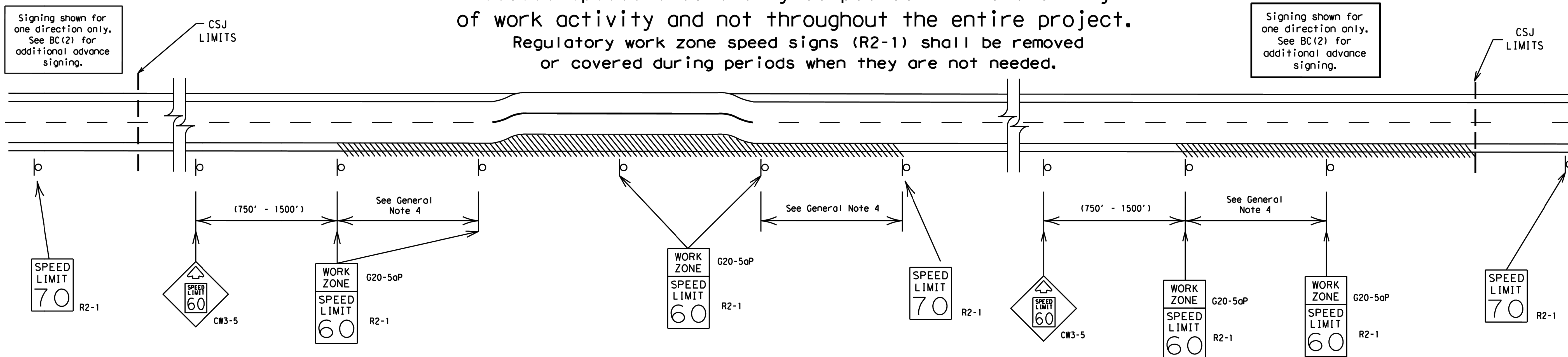
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# TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

Work zone speed limits shall be regulatory, established in accordance with the "Procedures for Establishing Speed Zones," and approved by the Texas Transportation Commission, or by City Ordinance when within Incorporated City Limits.

Reduced speeds should only be posted in the vicinity of work activity and not throughout the entire project. Regulatory work zone speed signs (R2-1) shall be removed or covered during periods when they are not needed.



## GUIDANCE FOR USE:

### LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit should be included on the design of the traffic control plans when restricted geometrics with a lower design speed are present in the work zone and modification of the geometrics to a higher design speed is not feasible.

Long/Intermediate Term Work Zone Speed Limit signs, when approved as described above, should be posted and visible to the motorist when work activity is present. Work activity may also be defined as a change in the roadway that requires a reduced speed for motorists to safely negotiate the work area, including:

- rough road or damaged pavement surface
- substantial alteration of roadway geometrics (diversions)
- construction detours
- grade
- width
- other conditions readily apparent to the driver

As long as any of these conditions exist, the work zone speed limit signs should remain in place.

### SHORT TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit may be included on the design of the traffic control plans when workers or equipment are not behind concrete barrier, when work activity is within 10 feet of the traveled way or actually in the traveled way.

Short Term Work Zone Speed Limit signs should be posted and visible to the motorists only when work activity is present. When work activity is not present, signs shall be removed or covered. (See Removing or Covering on BC(4)).

## GENERAL NOTES

- Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
- Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
- Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
- Frequency of work zone speed limit signs should be:
 

40 mph and greater	0.2 to 2 miles
35 mph and less	0.2 to 1 mile
- Regulatory speed limit signs shall have black legend and border on a white reflective background (See "Reflective Sheeting" on BC(4)).
- Fabrication, erection and maintenance of the "ADVANCE SPEED LIMIT" (CW3-5) sign, "WORK ZONE" (G20-5aP) plaque and the "SPEED LIMIT" (R2-1) signs shall not be paid for directly, but shall be considered subsidiary to Item 502.
- Turning signs from view, laying signs over or down will not be allowed, unless as otherwise noted under "REMOVING OR COVERING" on BC(4).
- Techniques that may help reduce traffic speeds include but are not limited to:
  - Law enforcement.
  - Flagger stationed next to sign.
  - Portable changeable message sign (PCMS).
  - Low-power (drone) radar transmitter.
  - Speed monitor trailers or signs.
- Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.
- For more specific guidance concerning the type of work, work zone conditions and factors impacting allowable regulatory construction speed zone reduction see TxDOT form #1204 in the TxDOT e-form system.

SHEET 3 OF 12

<h2>BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT</h2>			
<h3>BC (3) - 21</h3>			
FILE#	bc-21.dgn	DN#	TxDOT
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7-13	5-21		
DIST		COUNTY	SHEET NO.

**Kimley»Horn**

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01/06/2025

STATE OF TEXAS

ABBEY W. POLZIN  
151558

Professional Engineer

Abbey Polzin

KHA PROJECT	067785106
DATE	AUGUST 2025
SCALE AS SHOWN	
DESIGNED BY: NMT	
DRAWN BY: NMT	
CHECKED BY: AMP	

**CITY OF GALVESTON**  
**UTMB EST**  
**REHABILITATION**

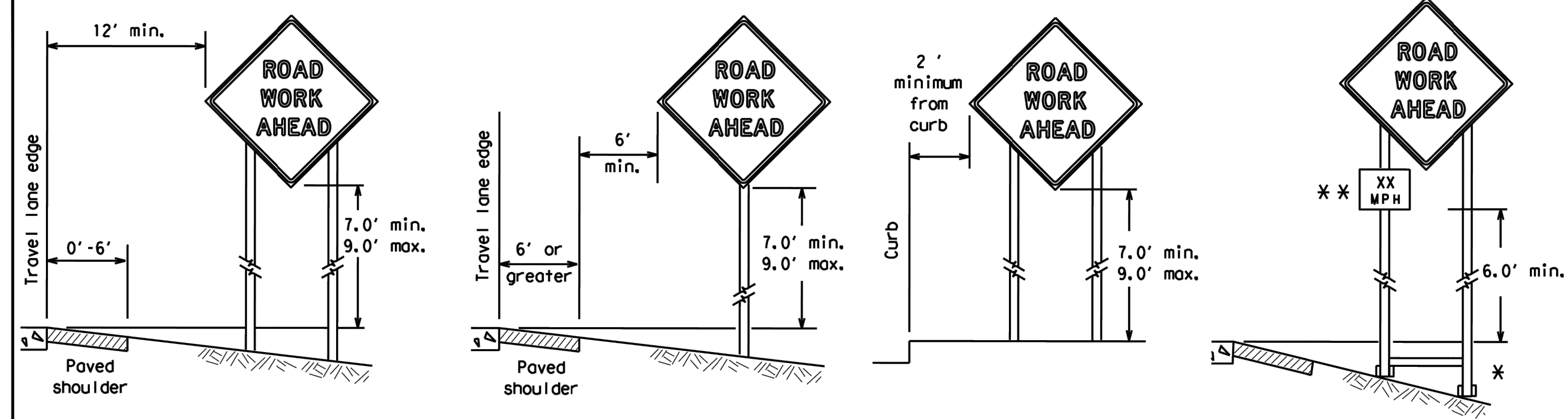
**TRAFFIC CONTROL**  
**DETAILS (5 OF 14)**

SHEET NUMBER  
**C-21**

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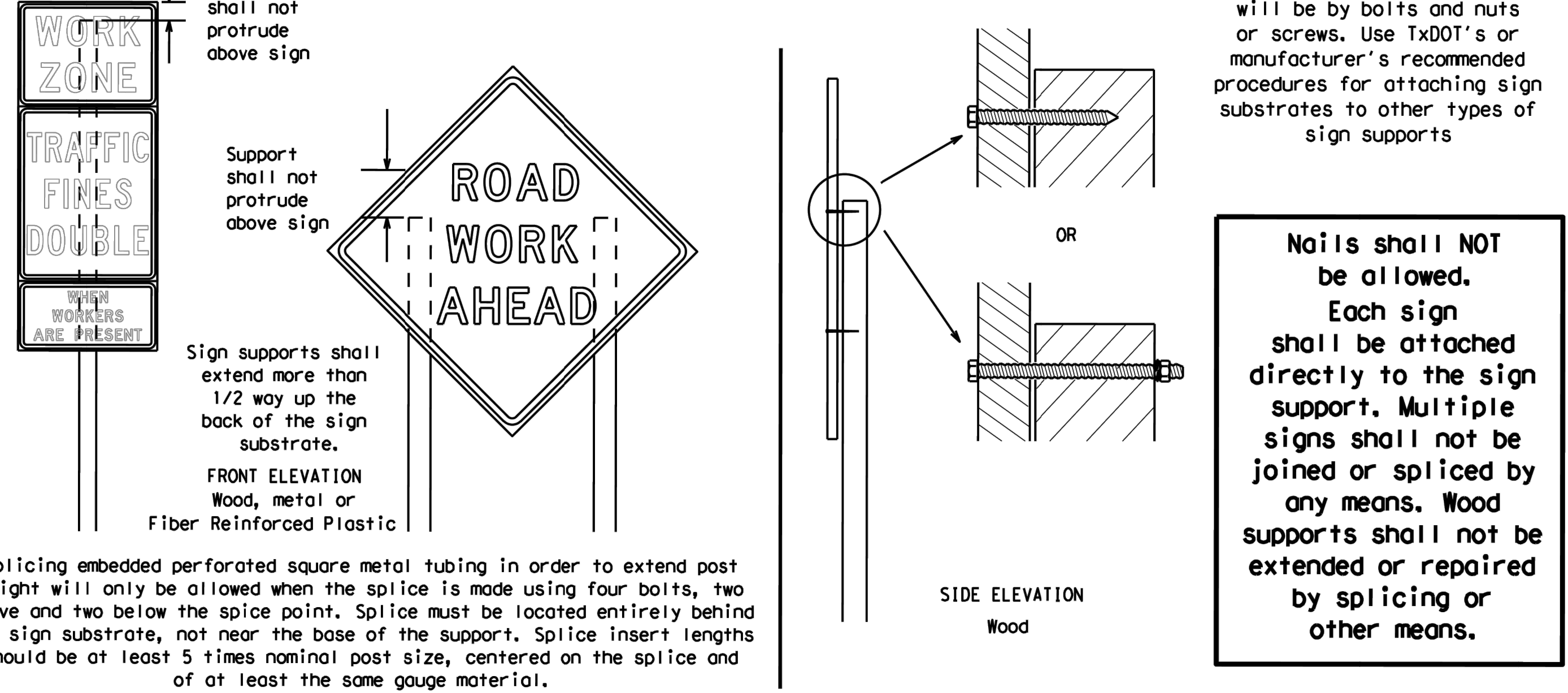
**TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS**



* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

** When plaques are placed on dual-leg supports, they should be attached to the upright nearest the travel lane. Supplemental plaques (advisory or distance) should not cover the surface of the parent sign.

**ATTACHMENT FOR SIGN SUPPORTS**



Splicing embedded perforated square metal tubing in order to extend post height will only be allowed when the splice is made using four bolts, two above and two below the splice point. Splice must be located entirely behind the sign substrate, not near the base of the support. Splice insert lengths should be at least 5 times nominal post size, centered on the splice and of at least the same gauge material.

**GENERAL NOTES FOR WORK ZONE SIGNS**

- Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
- Wooden sign posts shall be painted white.
- Barricades shall NOT be used as sign supports.
- All signs shall be installed in accordance with the plans or as directed by the Engineer. Signs shall be used to regulate, warn, and guide the traveling public safely through the work zone.
- The Contractor may furnish either the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD). The Engineer/Inspector may require the Contractor to furnish other work zone signs that are shown in the TMUTCD but may have been omitted from the plans. Any variation in the plans shall be documented by written agreement between the Engineer and the Contractor's Responsible Person. All changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary and having both the Inspector and Contractor initial and date the agreed upon changes.
- The Contractor shall furnish sign supports listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD) for small roadside signs. Supports for temporary large roadside signs shall meet the requirements detailed on the Temporary Large Roadside Signs (TLRS) standard sheets. The Contractor shall install the sign support in accordance with the manufacturer's recommendations. If there is a question regarding installation procedures, the Contractor shall furnish the Engineer a copy of the manufacturer's installation recommendations so the Engineer can verify the correct procedures are being followed.
- The Contractor is responsible for installing signs on approved supports and replacing signs with damaged or cracked substrates and/or damaged or marred reflective sheeting as directed by the Engineer/Inspector.
- Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used for identification shall be 1 inch.
- The Contractor shall replace damaged wood posts. New or damaged wood sign posts shall not be spliced.

**DURATION OF WORK (as defined by the "Texas Manual on Uniform Traffic Control Devices" Part 6)**

- The types of sign supports, sign mounting height, the size of signs, and the type of sign substrates can vary based on the type of work being performed. The Engineer is responsible for selecting the appropriate size sign for the type of work being performed. The Contractor is responsible for ensuring the sign support, sign mounting height and substrate meets manufacturer's recommendations in regard to crashworthiness and duration of work requirements.
  - Long-term stationary - work that occupies a location more than 3 days.
  - Intermediate-term stationary - work that occupies a location more than one daylight period up to 3 days, or nighttime work lasting more than one hour.
  - Short-term stationary - daytime work that occupies a location for more than 1 hour in a single daylight period.
  - Short, duration - work that occupies a location up to 1 hour.
  - Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

**SIGN MOUNTING HEIGHT**

- The bottom of Long-term/Intermediate-term signs shall be at least 7 feet, but not more than 9 feet, above the paved surface, except as shown for supplemental plaques mounted below other signs.
- The bottom of Short-term/Short Duration signs shall be a minimum of 1 foot above the pavement surface but no more than 2 feet above the ground.
- Long-term/Intermediate-term Signs may be used in lieu of Short-term/Short Duration signing.
- Short-term/Short Duration signs shall be used only during daylight and shall be removed at the end of the workday or raised to appropriate Long-term/Intermediate sign height.
- Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

**SIZE OF SIGNS**

- The Contractor shall furnish the sign sizes shown on BC (2) unless otherwise shown in the plans or as directed by the Engineer.

**SIGN SUBSTRATES**

- The Contractor shall ensure the sign substrate is installed in accordance with the manufacturer's recommendations for the type of sign support that is being used. The CWZTCD lists each substrate that can be used on the different types and models of sign supports.
- "Mesh" type materials are NOT an approved sign substrate, regardless of the tightness of the weave.
- All wooden individual sign panels fabricated from 2 or more pieces shall have one or more plywood cleat, 1/2" thick by 6" wide, fastened to the back of the sign and extending fully across the sign. The cleat shall be attached to the back of the sign using wood screws that do not penetrate the face of the sign panel. The screws shall be placed on both sides of the splice and spaced at 6" centers. The Engineer may approve other methods of splicing the sign face.

**REFLECTIVE SHEETING**

- All signs shall be retroreflective and constructed of sheeting meeting the color and retro-reflectivity requirements of DMS-8300 for rigid signs or DMS-8310 for roll-up signs. The web address for DMS specifications is shown on BC(1).
- White sheeting, meeting the requirements of DMS-8300 Type A, shall be used for signs with a white background.
- Orange sheeting, meeting the requirements of DMS-8300 Type B_{FL} or Type C_{FL}, shall be used for rigid signs with orange backgrounds.

**SIGN LETTERS**

- All sign letters and numbers shall be clear, and open rounded type uppercase alphabet letters as approved by the Federal Highway Administration (FHWA) and as published in the "Standard Highway Sign Design for Texas" manual. Signs, letters and numbers shall be of first class workmanship in accordance with Department Standards and Specifications.

**REMOVING OR COVERING**

- When sign messages may be confusing or do not apply, the signs shall be removed or completely covered.
- Long-term stationary or intermediate stationary signs installed on square metal tubing may be turned away from traffic 90 degrees when the sign message is not applicable. This technique may not be used for signs installed in the median of divided highways or near any intersections where the sign may be seen from approaching traffic.
- Signs installed on wooden skids shall not be turned at 90 degree angles to the roadway. These signs should be removed or completely covered when not required.
- When signs are covered, the material used shall be opaque, such as heavy mil black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night, without damaging the sign sheeting.
- Burlap shall NOT be used to cover signs.
- Duct tape or other adhesive material shall NOT be affixed to a sign face.
- Signs and anchor stubs shall be removed and holes backfilled upon completion of work.

**SIGN SUPPORT WEIGHTS**

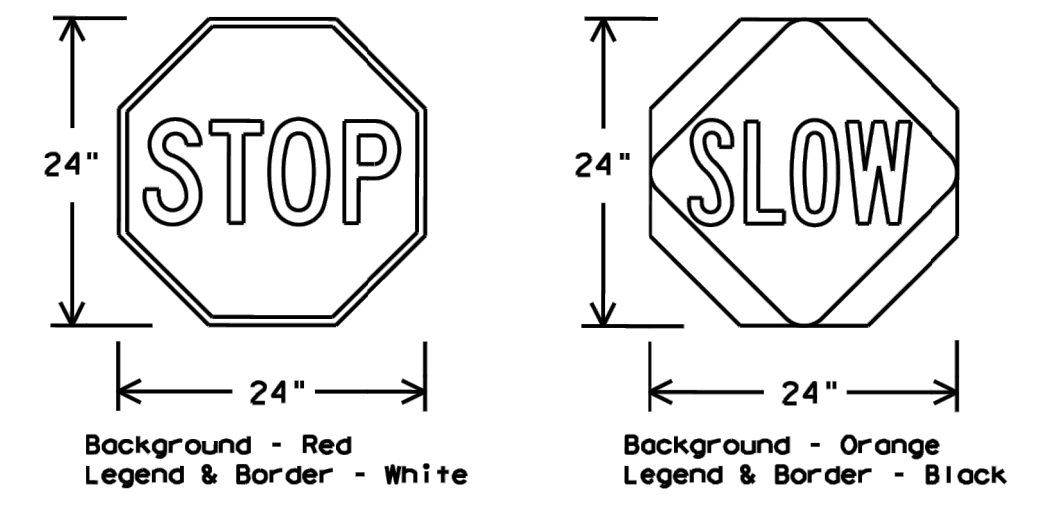
- Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used.
- The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
- Rock, concrete, iron, steel or other solid objects shall not be permitted for use as sign support weights.
- Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs.
- Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall NOT be used.
- Rubber ballasts designed for channelizing devices should not be used for ballast on portable sign supports. Sign supports designed and manufactured with rubber bases may be used when shown on the CWZTCD list.
- Sandbags shall only be placed along or laid over the base supports of the traffic control device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners. Sandbags shall be placed along the length of the skids to weigh down the sign support.
- Sandbags shall NOT be placed under the skid and shall not be used to level sign supports placed on slopes.

**FLAGS ON SIGNS**

- Flags may be used to draw attention to warning signs. When used, the flag shall be 16 inches square or larger and shall be orange or fluorescent red-orange in color. Flags shall not be allowed to cover any portion of the sign face.

**STOP/SLOW PADDLES**

- STOP/SLOW paddles are the primary method to control traffic by flaggers. The STOP/SLOW paddle size should be 24" x 24".
- STOP/SLOW paddles shall be retroreflectorized when used at night.
- STOP/SLOW paddles may be attached to a staff with a minimum length of 6' to the bottom of the sign.
- Any lights incorporated into the STOP or SLOW paddle faces shall only be as specifically described in Section 6E.03 Hand Signaling Devices in the TMUTCD.



SHEETING REQUIREMENTS (WHEN USED AT NIGHT)		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	ORANGE	TYPE B _{FL} OR C _{FL} SHEETING
LEGEND & BORDER	WHITE	TYPE B OR C SHEETING
LEGEND & BORDER	BLACK	ACRYLIC NON-REFLECTIVE FILM

**CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS**

- Permanent signs are used to give notice of traffic laws or regulations, call attention to conditions that are potentially hazardous to traffic operations, show route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, specific service (LOGO), or cultural information. Drivers proceeding through a work zone need the same, if not better route guidance as normally installed on a roadway without construction.
- When permanent regulatory or warning signs conflict with work zone conditions, remove or cover the permanent signs until the permanent sign message matches the roadway condition. For details for covering large guide signs see the TS-CD standard.
- When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times.
- If existing signs are to be relocated on their original supports, they shall be installed on crashworthy bases as shown on the SMD Standard sheets. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards. This work should be paid for under the appropriate pay item for relocating existing signs.
- If permanent signs are to be removed and relocated using temporary supports, the Contractor shall use crashworthy supports as shown on the BC standard sheets, TLRS standard sheets or the CWZTCD list. The signs shall meet the required mounting heights shown on the BC, or the SMD standard sheets during construction. This work should be paid for under the appropriate pay item for relocating existing signs.
- Any sign or traffic control device that is struck or damaged by the Contractor or his/her construction equipment shall be replaced as soon as possible by the Contractor to ensure proper guidance for the motorists. This will be subsidiary to Item 502.

Texas Department of Transportation  
Traffic Safety Division Standard

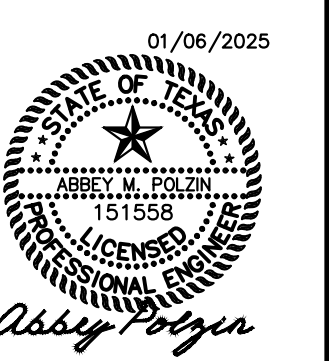
**BARRICADE AND CONSTRUCTION  
TEMPORARY SIGN NOTES**

**BC (4) - 21**

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REVISIONS				
9-07 8-14	DIST		COUNTY	SHEET NO.
7-13 5-21				

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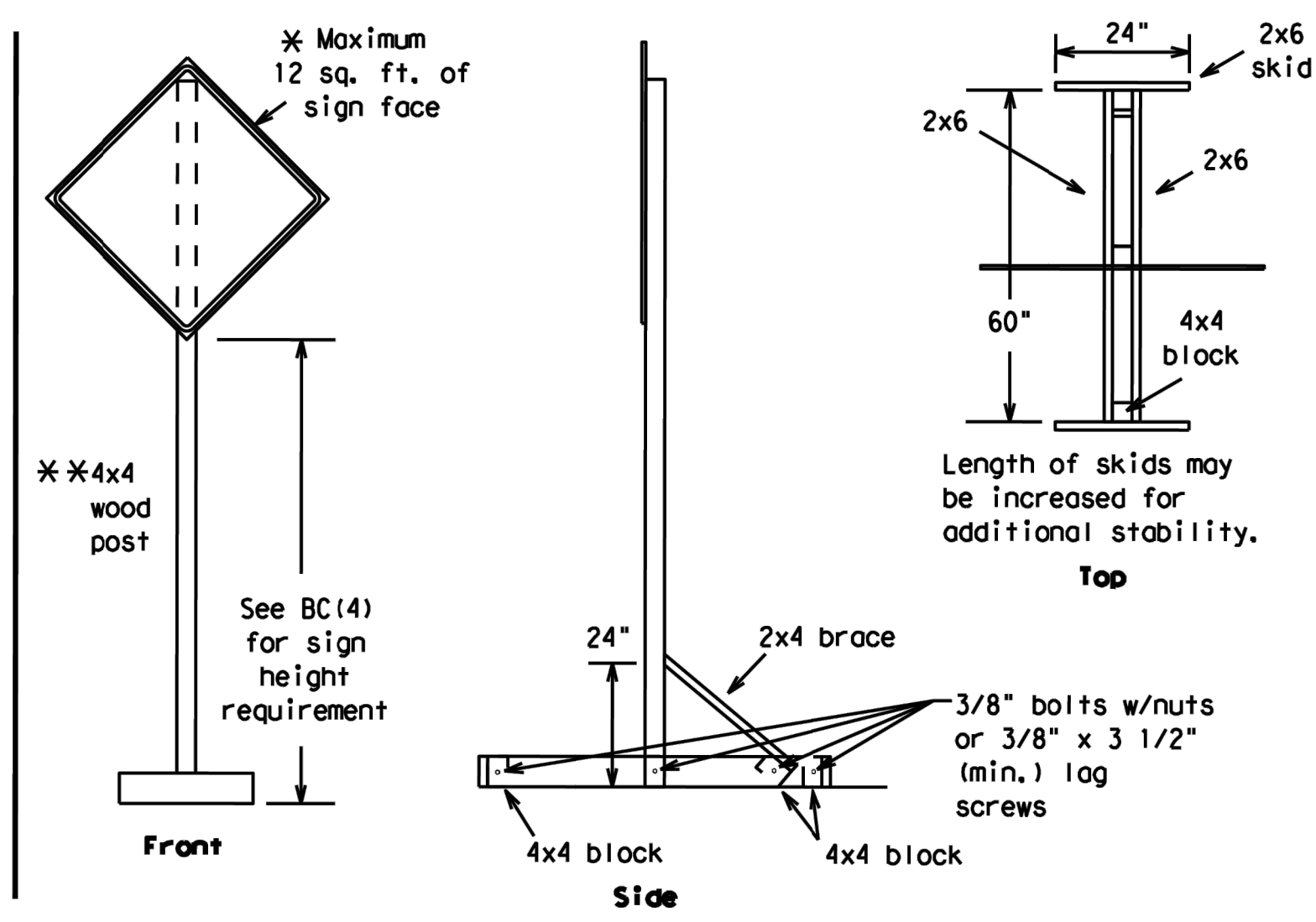
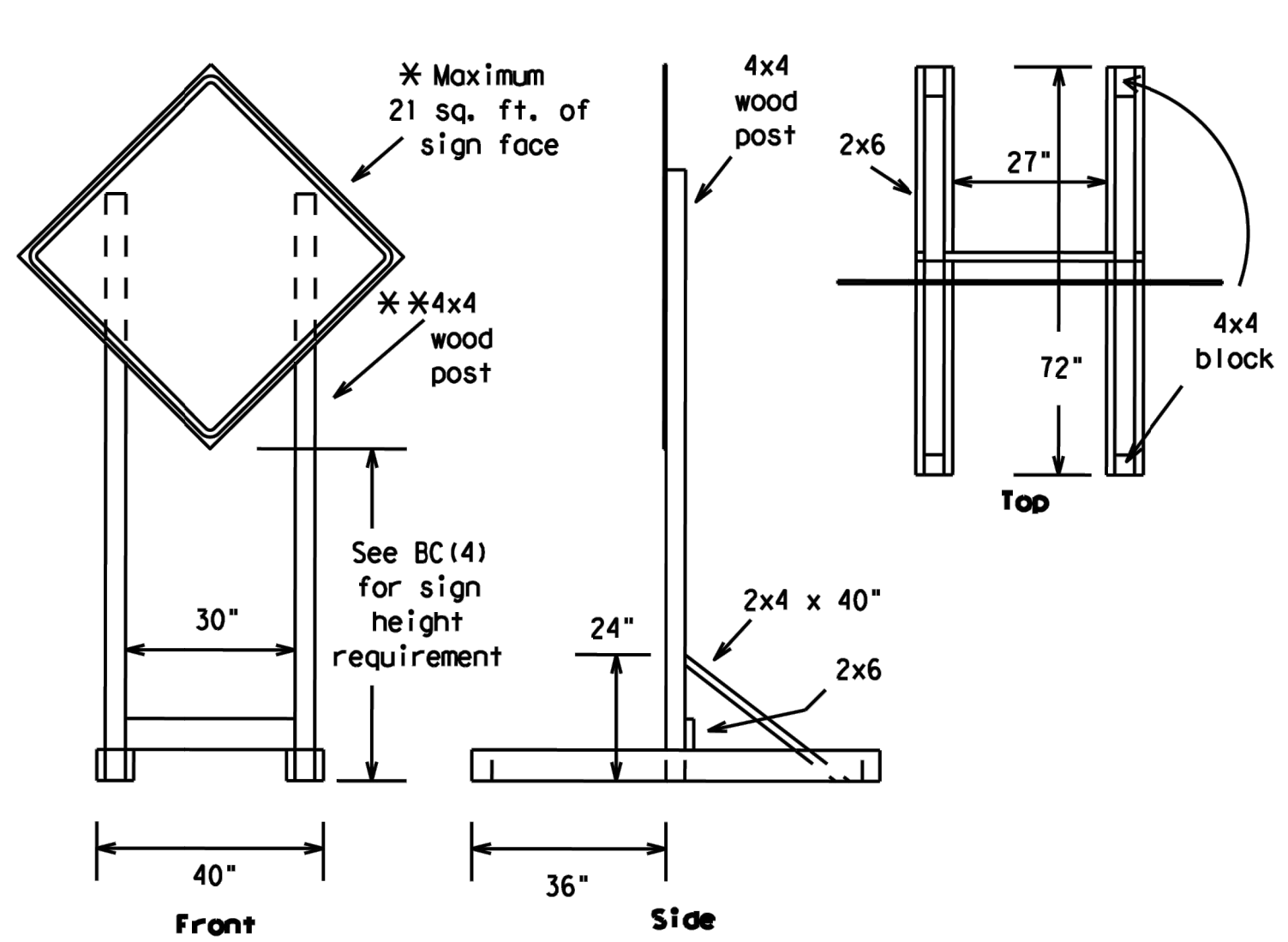


KHA PROJECT	067785106
DATE	AUGUST 2025
SCALE AS SHOWN	
DESIGNED BY:	NMT
DRAWN BY:	NMT
CHECKED BY:	AMP

**CITY OF GALVESTON  
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REHABILITATION**

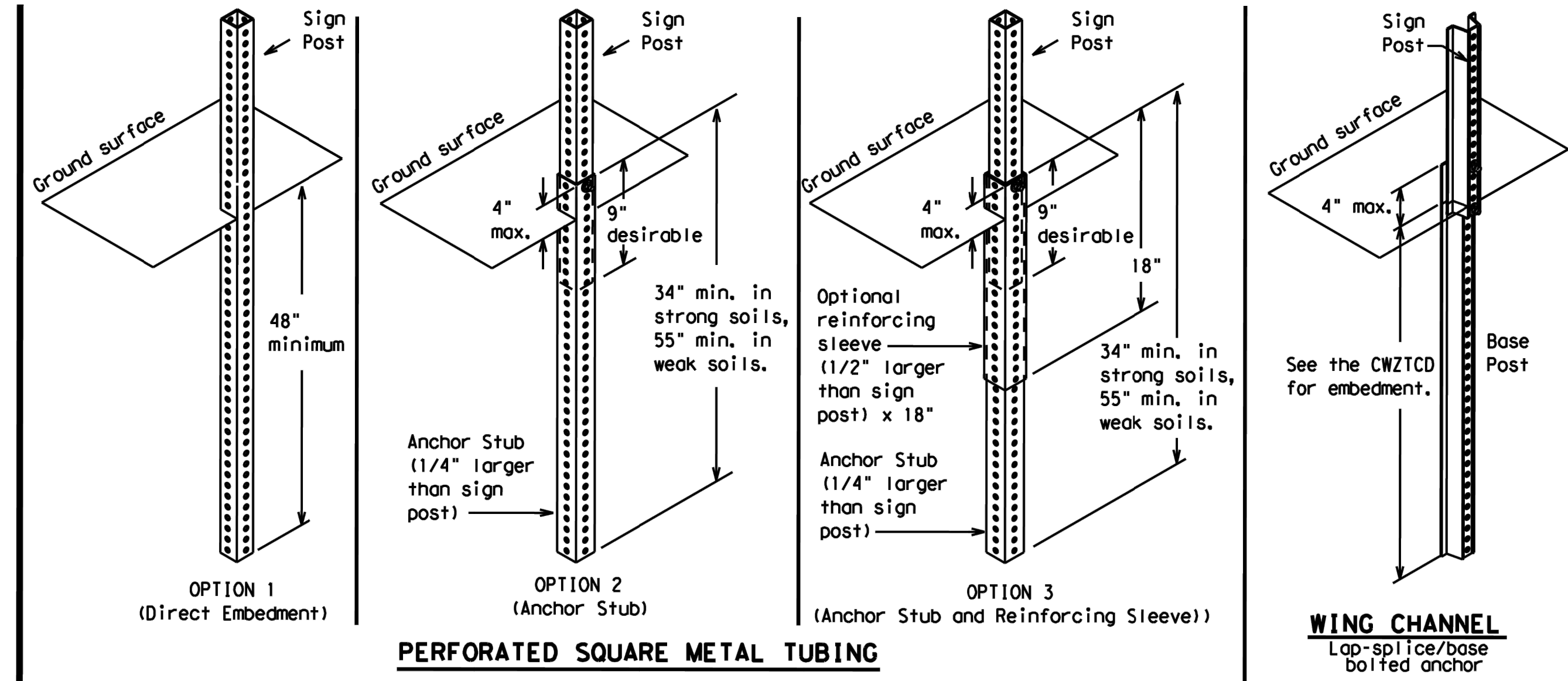
**TRAFFIC CONTROL  
DETAILS (6 OF 14)**

SHEET NUMBER  
**C-22**



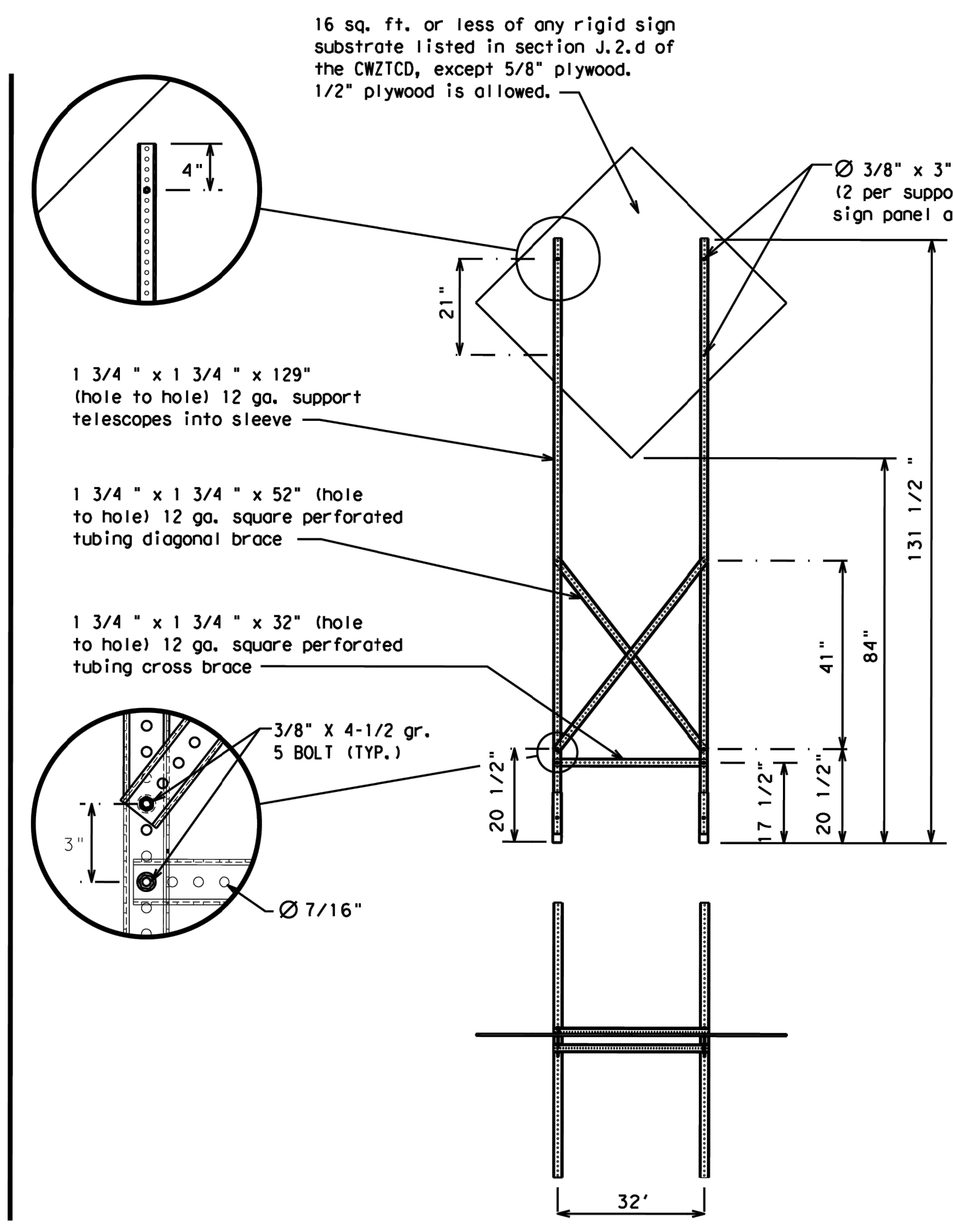
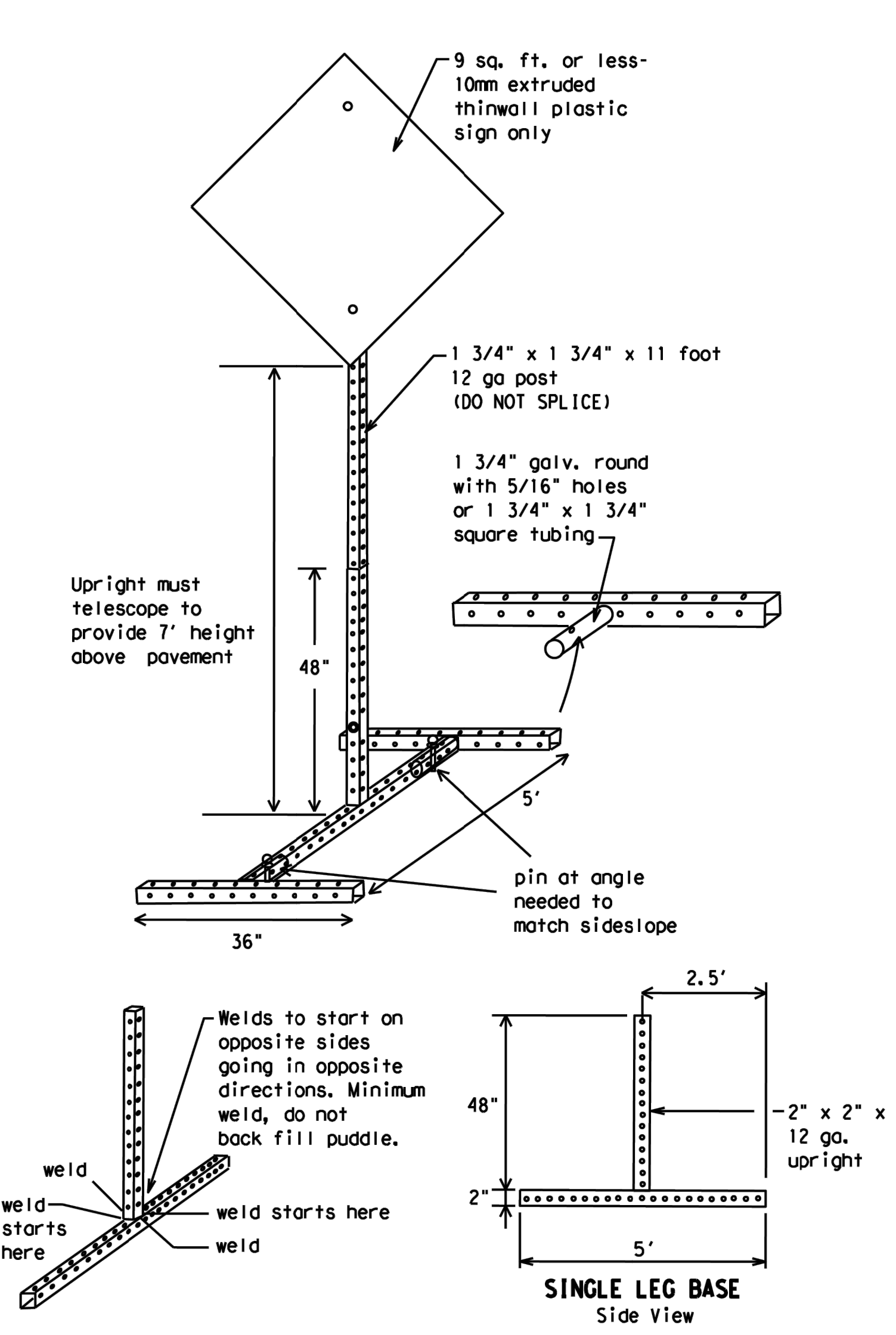
### SKID MOUNTED WOOD SIGN SUPPORTS

* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS



### GROUND MOUNTED SIGN SUPPORTS

Refer to the CWZTCD and the manufacturer's installation procedure for each type sign support. The maximum sign square footage shall adhere to the manufacturer's recommendation. Two post installations can be used for larger signs.



### SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

### WEDGE ANCHORS

Both steel and plastic Wedge Anchor Systems as shown on the SMD Standard Sheets may be used as temporary sign supports for signs up to 10 square feet of sign face. They may be set in concrete or in sturdy soils if approved by the Engineer. (See web address for "Traffic Engineering Standard Sheets" on BC(1)).

### OTHER DESIGNS

MORE DETAILS OF APPROVED LONG/INTERMEDIATE AND SHORT TERM SUPPORTS CAN BE FOUND ON THE CWZTCD LIST. SEE BC(1) FOR WEBSITE LOCATION.

### GENERAL NOTES

- Nails may be used in the assembly of wooden sign supports, but 3/8" bolts with nuts or 3/8" x 3 1/2" lag screws must be used on every joint for final connection.
  - No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCD List.
  - When project is completed, all sign supports and foundations shall be removed from the project site. This will be considered subsidiary to Item 502.
- * See BC(4) for definition of "Work Duration."  
 ** Wood sign posts MUST be one piece. Splicing will NOT be allowed. Posts shall be painted white.  
 See the CWZTCD for the type of sign substrate that can be used for each approved sign support.

SHEET 5 OF 12



### BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC (5) - 21

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 ASSEY POLZIN

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TRAFFIC CONTROL  
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 SHEET NUMBER  
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WHEN NOT IN USE, REMOVE THE PCMS FROM THE RIGHT-OF-WAY OR PLACE THE PCMS BEHIND BARRIER OR GUARDRAIL WITH SIGN PANEL TURNED PARALLEL TO TRAFFIC

- PORTABLE CHANGEABLE MESSAGE SIGNS**
- The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
  - Messages on PCMS should contain no more than 8 words (about four to eight characters per word), not including simple words such as "TO," "FOR," "AT," etc.
  - Messages should consist of a single phase, or two phases that alternate. Three-phase messages are not allowed. Each phase of the message should convey a single thought, and must be understood by itself.
  - Use the word "EXIT" to refer to an exit ramp on a freeway; i.e., "EXIT CLOSED." Do not use the term "RAMP."
  - Always use the route or interstate designation (IH, US, SH, FM) along with the number when referring to a roadway.
  - When in use, the bottom of a stationary PCMS message panel should be a minimum 7 feet above the roadway, where possible.
  - The message term "WEEKEND" should be used only if the work is to start on Saturday morning and end by Sunday evening at midnight. Actual days and hours of work should be displayed on the PCMS if work is to begin on Friday evening and/or continue into Monday morning.
  - The Engineer/Inspector may select one of two options which are available for displaying a two-phase message on a PCMS. Each phase may be displayed for either four seconds each or for three seconds each. Do not "flash" messages or words included in a message. The message should be steady burn or continuous while displayed.
  - Do not present redundant information on a two-phase message; i.e., keeping two lines of the message the same and changing the third line.
  - Do not use the word "Danger" in message.
  - Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
  - Do not display messages that scroll horizontally or vertically across the face of the sign.
  - The following table lists abbreviated words and two-word phrases that are acceptable for use on a PCMS. Both words in a phrase must be displayed together. Words or phrases not on this list should not be abbreviated, unless shown in the TMUTCD.
  - PCMS character height should be at least 18 inches for trailer mounted units. They should be visible from at least 1/2 (.5) mile and the text should be legible from at least 600 feet at night and 800 feet in daylight. Truck mounted units must have a character height of 10 inches and must be legible from at least 400 feet.
  - Each line of text should be centered on the message board rather than left or right justified.
  - If disabled, the PCMS should default to an illegible display that will not alarm motorists and will only be used to alert workers that the PCMS has malfunctioned. A pattern such as a series of horizontal solid bars is appropriate.

WORD OR PHRASE	ABBREVIATION	WORD OR PHRASE	ABBREVIATION
Access Road	ACCS RD	Major	MAJ
Alternate	ALT	Miles	MI
Avenue	AVE	Miles Per Hour	MPH
Best Route	BEST RTE	Minor	MNR
Boulevard	BLVD	Monday	MON
Bridge	BRDG	Normal	NORM
Cannot	CANT	North	N
Center	CTR	Northbound	(route) N
Construction Ahead	CONST AHD	Parking	PKING
CROSSING	XING	Road	RD
Detour Route	DETOUR RTE	Right Lane	RT LN
Do Not	DONT	Saturday	SAT
East	E	Service Road	SERV RD
Eastbound	(route) E	Shoulder	SHLDR
Emergency	EMER	Slippery	SLIP
Emergency Vehicle	EMER VEH	South	S
Entrance, Enter	ENT	Southbound	(route) S
Express Lane	EXP LN	Speed	SPD
Expressway	EXPWY	Street	ST
XXXX Feet	XXXX FT	Sunday	SUN
Fog Ahead	FOG AHD	Telephone	PHONE
Freeway	FRWY, FWY	Temporary	TEMP
Freeway Blocked	FWY BLKD	Thursday	THURS
Friday	FRI	To Downtown	TO DOWNTN
Hazardous Driving	HAZ DRIVING	Traffic	TRAF
Hazardous Material	HAZMAT	Travelers	TRVLRS
High-Occupancy	HOV	Tuesday	TUES
Vehicle	VEH	Time Minutes	TIME MIN
Highway	HWY	Upper Level	UPR LEVEL
Hour(s)	HR, HRS	Vehicles (s)	VEH, VEHS
Information	INFO	Warning	WARN
It Is	ITS	Wednesday	WED
Junction	JCT	Weight Limit	WT LIMIT
Left	LFT	West	W
Left Lane	LFT LN	Westbound	(route) W
Lane Closed	LN CLOSED	Wet Pavement	WET PVMT
Lower Level	LWR LEVEL	Will Not	WONT
Maintenance	MAINT		

Roadway designation # IH-number, US-number, SH-number, FM-number

# RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

(The Engineer may approve other messages not specifically covered here.)

## Phase 1: Condition Lists

Road/Lane/Ramp Closure List		Other Condition List	
FREEWAY CLOSED X MILE	FRONTAGE ROAD CLOSED	ROADWORK XXX FT	ROAD REPAIRS XXXX FT
ROAD CLOSED AT SH XXX	SHOULDER CLOSED XXX FT	FLAGGER XXXX FT	LANE NARROWS XXXX FT
ROAD CLSD AT FM XXXX	RIGHT LN CLOSED XXX FT	RIGHT LN NARROWS XXXX FT	TWO-WAY TRAFFIC XX MILE
RIGHT X LANES CLOSED	RIGHT X LANES OPEN	MERGING TRAFFIC XXXX FT	CONST TRAFFIC XXX FT
CENTER LANE CLOSED	DAYTIME CLOSURES	LOOSE GRAVEL XXXX FT	UNEVEN LANES XXXX FT
NIGHT LANE CLOSURES	I-XX SOUTH EXIT CLOSED	DETOUR X MILE	ROUGH ROAD XXXX FT
VARIOUS LANES CLOSED	EXIT XXX CLOSED X MILE	ROADWORK PAST SH XXXX	ROADWORK NEXT FRI-SUN
EXIT CLOSED	RIGHT LN TO BE CLOSED	BUMP XXXX FT	US XXX EXIT X MILES
MALL DRIVEWAY CLOSED	X LANES CLOSED TUE - FRI	TRAFFIC SIGNAL XXXX FT	LANES SHIFT
XXXXXXXX BLVD CLOSED			*

* LANES SHIFT in Phase 1 must be used with STAY IN LANE in Phase 2.

## Phase 2: Possible Component Lists

Action to Take/Effect on Travel List	Location List	Warning List	** Advance Notice List
MERGE RIGHT	AT FM XXXX	SPEED LIMIT XX MPH	TUE-FRI XX AM- X PM
DETOUR NEXT X EXITS	BEFORE RAILROAD CROSSING	MAXIMUM SPEED XX MPH	APR XX- X PM-X AM
USE EXIT XXX	NEXT X MILES	MINIMUM SPEED XX MPH	BEGINS MONDAY
STAY ON US XXX SOUTH	PAST US XXX EXIT	ADVISORY SPEED XX MPH	BEGINS MAY XX
TRUCKS USE US XXX N	XXXXXXX TO XXXXXXX	RIGHT LANE EXIT	MAY X-X XX PM - XX AM
WATCH FOR TRUCKS	US XXX TO FM XXXX	USE CAUTION	NEXT FRI-SUN
EXPECT DELAYS		DRIVE SAFELY	XX AM TO XX PM
REDUCE SPEED XXX FT		DRIVE WITH CARE	NEXT TUE AUG XX
USE OTHER ROUTES			TONIGHT XX PM- XX AM
STAY IN LANE			

** See Application Guidelines Note 6.

### APPLICATION GUIDELINES

- Only 1 or 2 phases are to be used on a PCMS.
- The 1st phase (or both) should be selected from the "Road/Lane/Ramp Closure List" and the "Other Condition List".
- A 2nd phase can be selected from the "Action to Take/Effect on Travel, Location, General Warning, or Advance Notice Phase Lists".
- A Location Phase is necessary only if a distance or location is not included in the first phase selected.
- If two PCMS are used in sequence, they must be separated by a minimum of 1000 ft. Each PCMS shall be limited to two phases, and should be understandable by themselves.
- For advance notice, when the current date is within seven days of the actual work date, calendar days should be replaced with days of the week. Advance notification should typically be for no more than one week prior to the work.

### WORDING ALTERNATIVES

- The words RIGHT, LEFT and ALL can be interchanged as appropriate.
- Roadway designations IH, US, SH, FM and LP can be interchanged as appropriate.
- EAST, WEST, NORTH and SOUTH (or abbreviations E, W, N and S) can be interchanged as appropriate.
- Highway names and numbers replaced as appropriate.
- ROAD, HIGHWAY and FREEWAY can be interchanged as needed.
- AHEAD may be used instead of distances if necessary.
- FT and MI, MILE and MILES interchanged as appropriate.
- AT, BEFORE and PAST interchanged as needed.
- Distances or AHEAD can be eliminated from the message if a location phase is used.

PCMS SIGNS WITHIN THE R.O.W. SHALL BE BEHIND GUARDRAIL OR CONCRETE BARRIER OR SHALL HAVE A MINIMUM OF FOUR (4) PLASTIC DRUMS PLACED PERPENDICULAR TO TRAFFIC ON THE UPSTREAM SIDE OF THE PCMS, WHEN EXPOSED TO ONE DIRECTION OF TRAFFIC. WHEN EXPOSED TO TWO WAY TRAFFIC, THE FOUR DRUMS SHOULD BE PLACED WITH ONE DRUM AT EACH OF THE FOUR CORNERS OF THE UNIT.

### FULL MATRIX PCMS SIGNS

- When Full Matrix PCMS signs are used, the character height and legibility/visibility requirements shall be maintained as listed in Note 15 under "PORTABLE CHANGEABLE MESSAGE SIGNS" above.
- When symbol signs, such as the "Flagger Symbol" (CW20-7) are represented graphically on the Full Matrix PCMS sign and, with the approval of the Engineer, it shall maintain the legibility/visibility requirement listed above.
- When symbol signs are represented graphically on the Full Matrix PCMS, they shall only supplement the use of the static sign represented, and shall not substitute for, or replace that sign.
- A full matrix PCMS may be used to simulate a flashing arrow board provided it meets the visibility, flash rate and dimming requirements on BC(7), for the same size arrow.

**Texas Department of Transportation** Traffic Safety Division Standard

**BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)**

**BC (6) - 21**

FILE#	bc-21.dgn	DN#	TxDOT	CK#	TxDOT	DW#	TxDOT	CK#	TxDOT
©	TxDOT	NOVEMBER	2002	CONT	SECT	JOB	HIGHWAY		
REVISIONS									
9-07	8-14								
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SHEET NUMBER **C-24**

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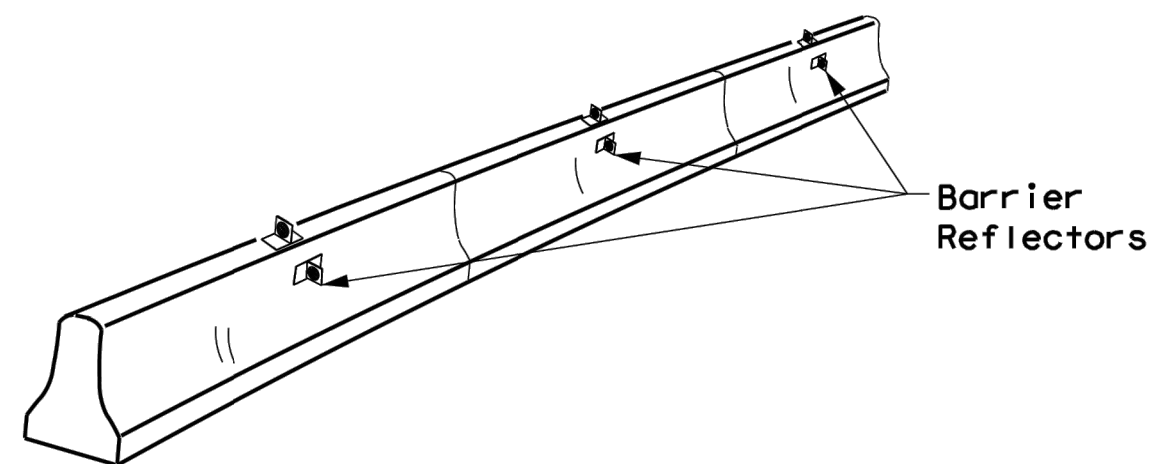
01/06/2025  
ABBEY W. POLZIN  
151558  
Professional Engineer  
Civil Engineering  
Abbeey Polzin

KHA PROJECT 067785106  
DATE AUGUST 2025  
SCALE AS SHOWN  
DESIGNED BY: NMT  
DRAWN BY: NMT  
CHECKED BY: AMP

**CITY OF GALVESTON**  
**UTMB EST**  
**REHABILITATION**

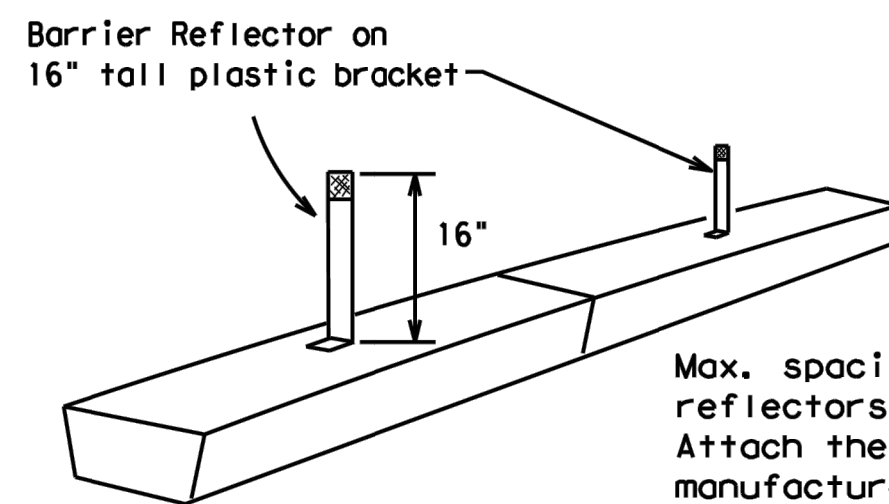
**TRAFFIC CONTROL**  
**DETAILS (8 OF 14)**

- Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
- Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost of the reflectors shall be considered subsidiary to Item 512.



**CONCRETE TRAFFIC BARRIER (CTB)**

- Where traffic is on one side of the CTB, two (2) Barrier Reflectors shall be mounted in approximately the midsection of each section of CTB. An alternate mounting location is uniformly spaced at one end of each CTB. This will allow for attachment of a barrier grapple without damaging the reflector. The Barrier Reflector mounted on the side of the CTB shall be located directly below the reflector mounted on top of the barrier, as shown in the detail above.
- Where CTB separates two-way traffic, three barrier reflectors shall be mounted on each section of CTB. The reflector unit on top shall have two yellow reflective faces (Bi-Directional) while the reflectors on each side of the barrier shall have one yellow reflective face, as shown in the detail above.
- When CTB separates traffic traveling in the same direction, no barrier reflectors will be required on top of the CTB.
- Barrier Reflector units shall be yellow or white in color to match the edgeline being supplemented.
- Maximum spacing of Barrier Reflectors is forty (40) feet.
- Pavement markers or temporary flexible-reflective roadway marker tabs shall NOT be used as CTB delineation.
- Attachment of Barrier Reflectors to CTB shall be per manufacturer's recommendations.
- Missing or damaged Barrier Reflectors shall be replaced as directed by the Engineer.
- Single slope barriers shall be delineated as shown on the above detail.

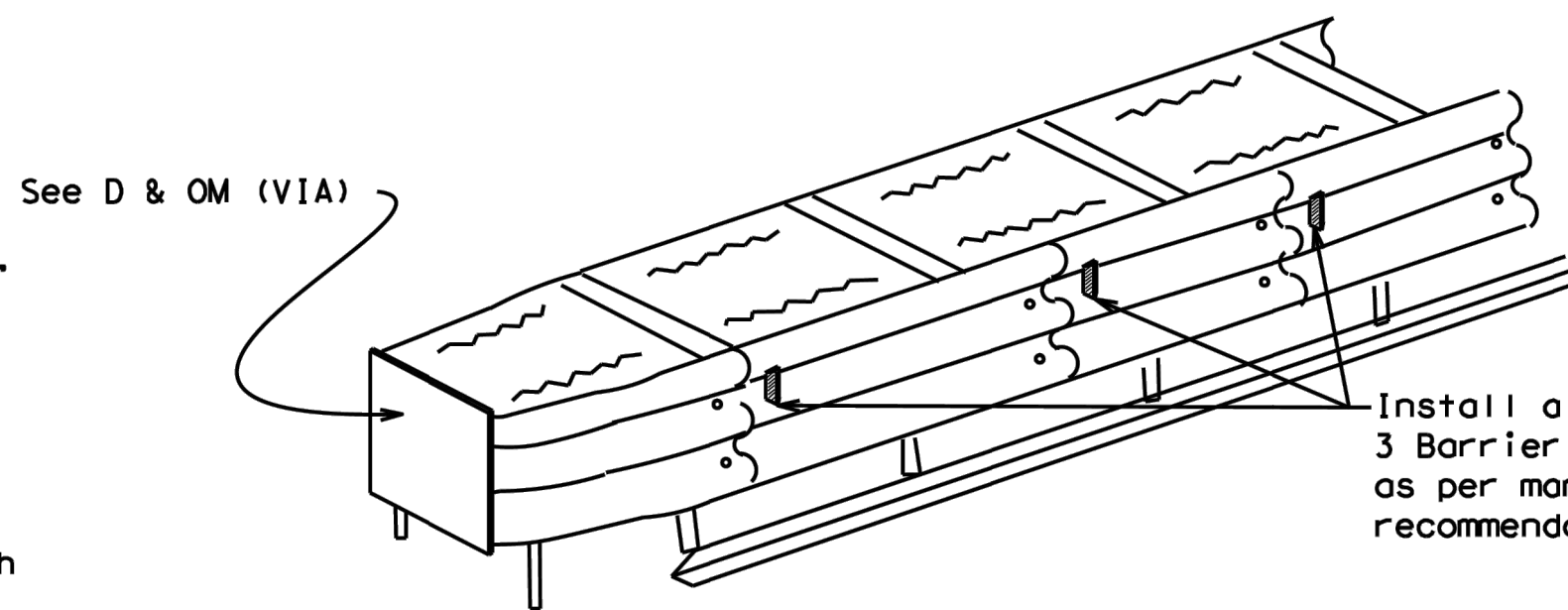


**LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES**

LPCB is approved for use in work zone locations, where the posted speed is 45mph, or less. See Roadway Standard Sheet LPCB.

Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

**LOW PROFILE CONCRETE BARRIER (LPCB)**



**DELINEATION OF END TREATMENTS**

**END TREATMENTS FOR CTB'S USED IN WORK ZONES**

End treatments used on CTB's in work zones shall meet the appropriate crashworthy standards as defined in the Manual for Assessing Safety Hardware (MASH). Refer to the CWZTCD List for approved end treatments and manufacturers.

**BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS**

**WARNING LIGHTS**

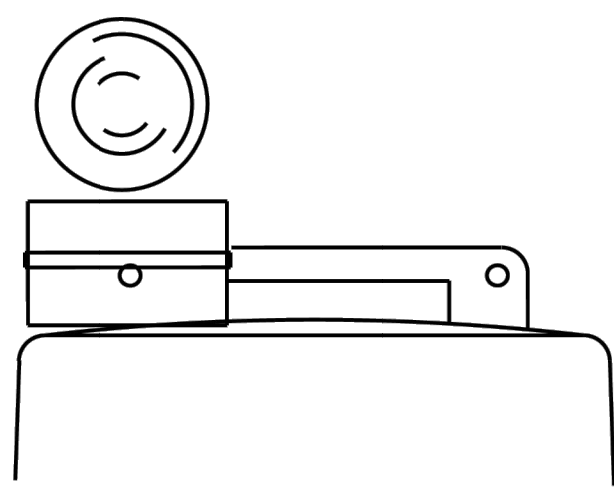
- Warning lights shall meet the requirements of the TMUTCD.
- Warning lights shall NOT be installed on barricades.
- Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "FL". The Type A Warning Lights shall not be used with signs manufactured with Type B_{FL} or C_{FL} Sheeting meeting the requirements of Departmental Material Specification DMS-8300.
- Type-C and Type D 360 degree Steady Burn Lights are intended to be used in a series for delineation to supplement other traffic control devices. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "SB".
- The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
- When required by the Engineer, the Contractor shall furnish a copy of the warning lights certification. The warning light manufacturer will certify the warning lights meet the requirements of the latest ITE Purchase Specifications for Flashing and Steady-Burn Warning Lights.
- When used to delineate curves, Type-C and Type D Steady Burn Lights should only be placed on the outside of the curve, not the inside.
- The location of warning lights and warning reflectors on drums shall be as shown elsewhere in the plans.

**WARNING LIGHTS MOUNTED ON PLASTIC DRUMS**

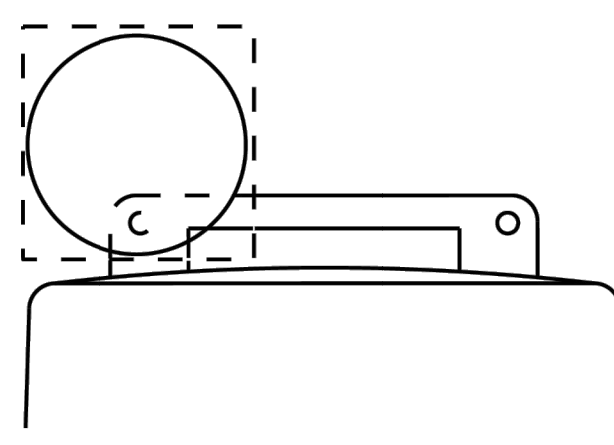
- Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
- Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
- A series of sequential flashing warning lights placed on channelizing devices to form a merging taper may be used for delineation. If used, the successive flashing of the sequential warning lights should occur from the beginning of the taper to the end of the merging taper in order to identify the desired vehicle path. The rate of flashing for each light shall be 65 flashes per minute, plus or minus 10 flashes.
- Type C and D steady-burn warning lights are intended to be used in a series to delineate the edge of the travel lane on detours, on lane changes, on lane closures, and on other similar conditions.
- Type A, Type C and Type D warning lights shall be installed at locations as detailed on other sheets in the plans.
- Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.
- The maximum spacing for warning lights on drums should be identical to the channelizing device spacing.

**WARNING REFLECTORS MOUNTED ON PLASTIC DRUMS AS A SUBSTITUTE FOR TYPE C (STEADY BURN) WARNING LIGHTS**

- A warning reflector or approved substitute may be mounted on a plastic drum as a substitute for a Type C, steady burn warning light at the discretion of the Contractor unless otherwise noted in the plans.
- The warning reflector shall be yellow in color and shall be manufactured using a sign substrate approved for use with plastic drums listed on the CWZTCD.
- The warning reflector shall have a minimum retroreflective surface area (one-side) of 30 square inches.
- Round reflectors shall be fully reflectorized, including the area where attached to the drum.
- Square substrates must have a minimum of 30 square inches of reflectorized sheeting. They do not have to be reflectorized where it attaches to the drum.
- The side of the warning reflector facing approaching traffic shall have sheeting meeting the color and retroreflectivity requirements for DMS 8300-Type B or Type C.
- When used near two-way traffic, both sides of the warning reflector shall be reflectorized.
- The warning reflector should be mounted on the side of the handle nearest approaching traffic.
- The maximum spacing for warning reflectors should be identical to the channelizing device spacing requirements.



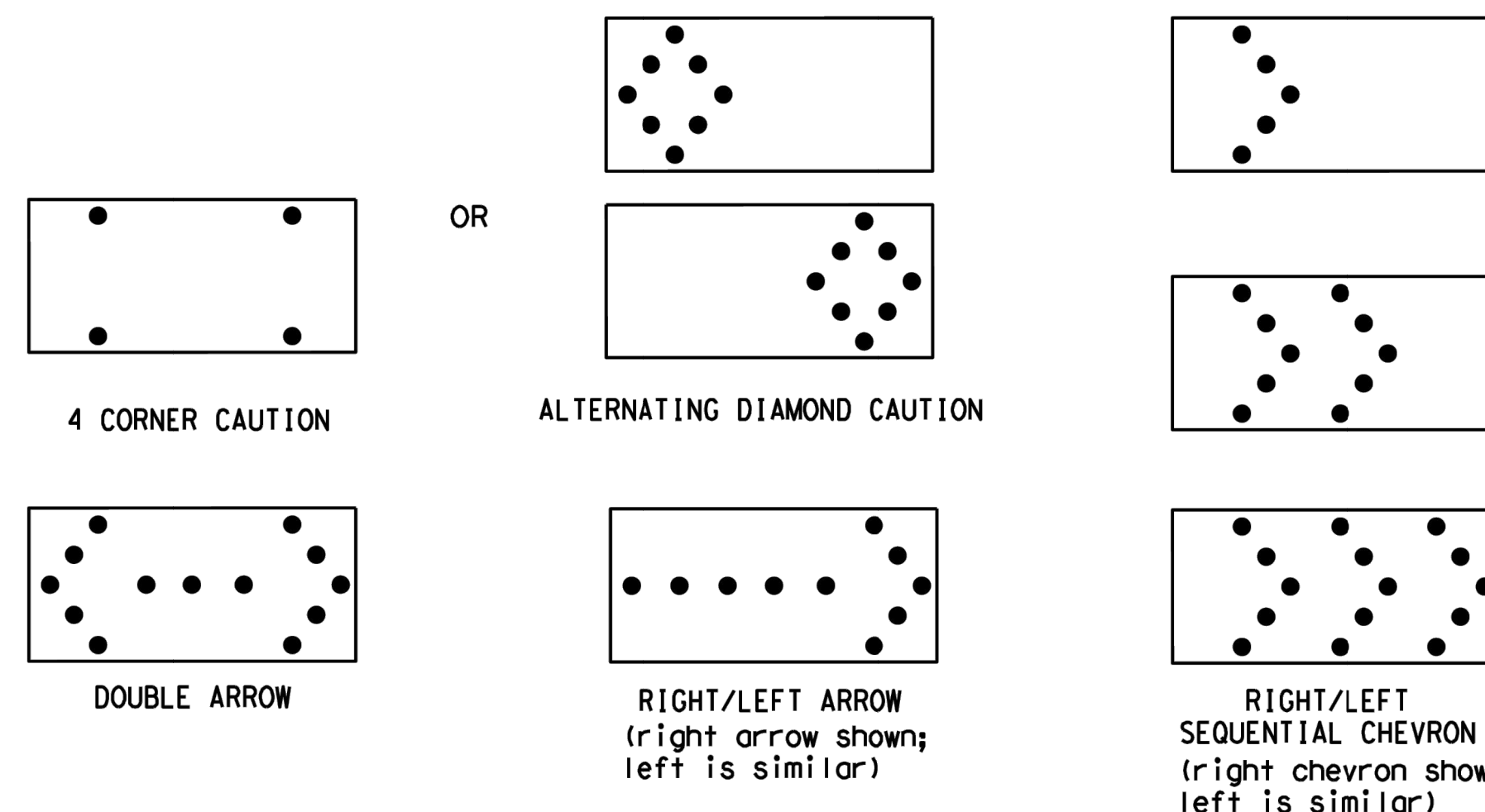
Type C Warning Light or approved substitute mounted on a drum adjacent to the travel way.



Warning reflector may be round or square. Must have a yellow reflective surface area of at least 30 square inches

Arrow Boards may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

- The Flashing Arrow Board should be used for all lane closures on multi-lane roadways, or slow moving maintenance or construction activities on the travel lanes.
- Flashing Arrow Boards should not be used on two-lane, two-way roadways, detours, diversions or work on shoulders unless the "CAUTION" display (see detail below) is used.
- The Engineer/Inspector shall choose all appropriate signs, barricades and/or other traffic control devices that should be used in conjunction with the Flashing Arrow Board.
- The Flashing Arrow Board should be able to display the following symbols:



- The "CAUTION" display consists of four corner lamps flashing simultaneously, or the Alternating Diamond Caution made as shown.
- The straight line caution display is NOT ALLOWED.
- The Flashing Arrow Board shall be capable of minimum 50 percent dimming from rated lamp voltage. The flashing rate of the lamps shall not be less than 25 nor more than 40 flashes per minute.
- Minimum lamp "on time" shall be approximately 50 percent for the flashing arrow and equal intervals of 25 percent for each sequential phase of the flashing chevron.
- The sequential arrow display is NOT ALLOWED.
- The flashing arrow display is the TxDOT standard; however, the sequential chevron display may be used during daylight operations.
- The Flashing Arrow Board shall be mounted on a vehicle, trailer or other suitable support.
- A Flashing Arrow Board SHALL NOT BE USED to laterally shift traffic.
- A full matrix PCMS may be used to simulate a Flashing Arrow Board provided it meets visibility, flash rate and dimming requirements on this sheet for the same size arrow.
- Minimum mounting height of trailer mounted Arrow Boards should be 7 feet from roadway to bottom of panel.

REQUIREMENTS			
TYPE	MINIMUM SIZE	MINIMUM NUMBER OF PANEL LAMPS	MINIMUM VISIBILITY DISTANCE
B	30 x 60	13	3/4 mile
C	48 x 96	15	1 mile

**ATTENTION**  
Flashing Arrow Boards shall be equipped with automatic dimming devices.

WHEN NOT IN USE, REMOVE THE ARROW BOARD FROM THE RIGHT-OF-WAY OR PLACE THE ARROW BOARD BEHIND CONCRETE TRAFFIC BARRIER OR GUARDRAIL.

**FLASHING ARROW BOARDS**

SHEET 7 OF 12

**TRUCK-MOUNTED ATTENUATORS**

- Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the Manual for Assessing Safety Hardware (MASH).
- Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
- Refer to the CWZTCD for a list of approved TMAs.
- TMAs are required on freeways unless otherwise noted in the plans.
- A TMA should be used anytime that it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the work performance.
- The only reason a TMA should not be required is when a work area is spread down the roadway and the work crew is an extended distance from the TMA.



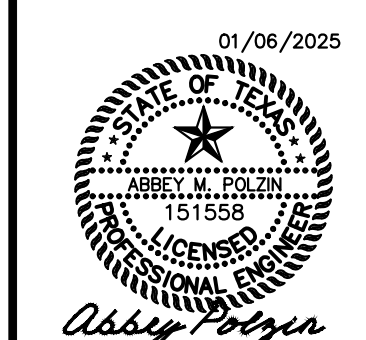
**BARRICADE AND CONSTRUCTION ARROW PANEL, REFLECTORS, WARNING LIGHTS & ATTENUATOR**

**BC (7) - 21**

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
9-07	8-14			
7-13	5-21			
DIST		COUNTY		SHEET NO.

NO.	DATE	BY

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KHA PROJECT	DATE	SCALE	DESIGNED BY	DRAWN BY	CHECKED BY
067785106	AUGUST 2025	AS SHOWN	NMT	NMT	AMP

**CITY OF GALVESTON  
UTMB EST  
REHABILITATION**

**TRAFFIC CONTROL  
DETAILS (9 OF 14)**

SHEET NUMBER  
**C-25**

Plotted: By: 2025-08-20 16:01:55, Baltazar, Victoria  
Last Saved: 2025-01-27 08:25:54 (TRAFFIC CONTROL DETAILS (9 OF 14))  
Filename: k:\hou_utilities\067785106-galveston_utmb_est_rehab\09_cad\03_plan_sheets\c-tcp-details.dwg

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**GENERAL NOTES**

- For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
- For intermediate term stationary work zones on freeways, drums should be used as the primary channelizing device but may be replaced in tangent sections by vertical panels, or 42" two-piece cones. In tangent sections, one-piece cones may be used with the approval of the Engineer but only if personnel are present on the project at all times to maintain the cones in proper position and location.
- For short term stationary work zones on freeways, drums are the preferred channelizing device but may be replaced in tapers, transitions and tangent sections by vertical panels, two-piece cones or one-piece cones as approved by the Engineer.
- Drums and all related items shall comply with the requirements of the current version of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
- Drums, bases, and related materials shall exhibit good workmanship and shall be free from objectionable marks or defects that would adversely affect their appearance or serviceability.
- The Contractor shall have a maximum of 24 hours to replace any plastic drums identified for replacement by the Engineer/Inspector. The replacement device must be an approved device.

**GENERAL DESIGN REQUIREMENTS**

Pre-qualified plastic drums shall meet the following requirements:

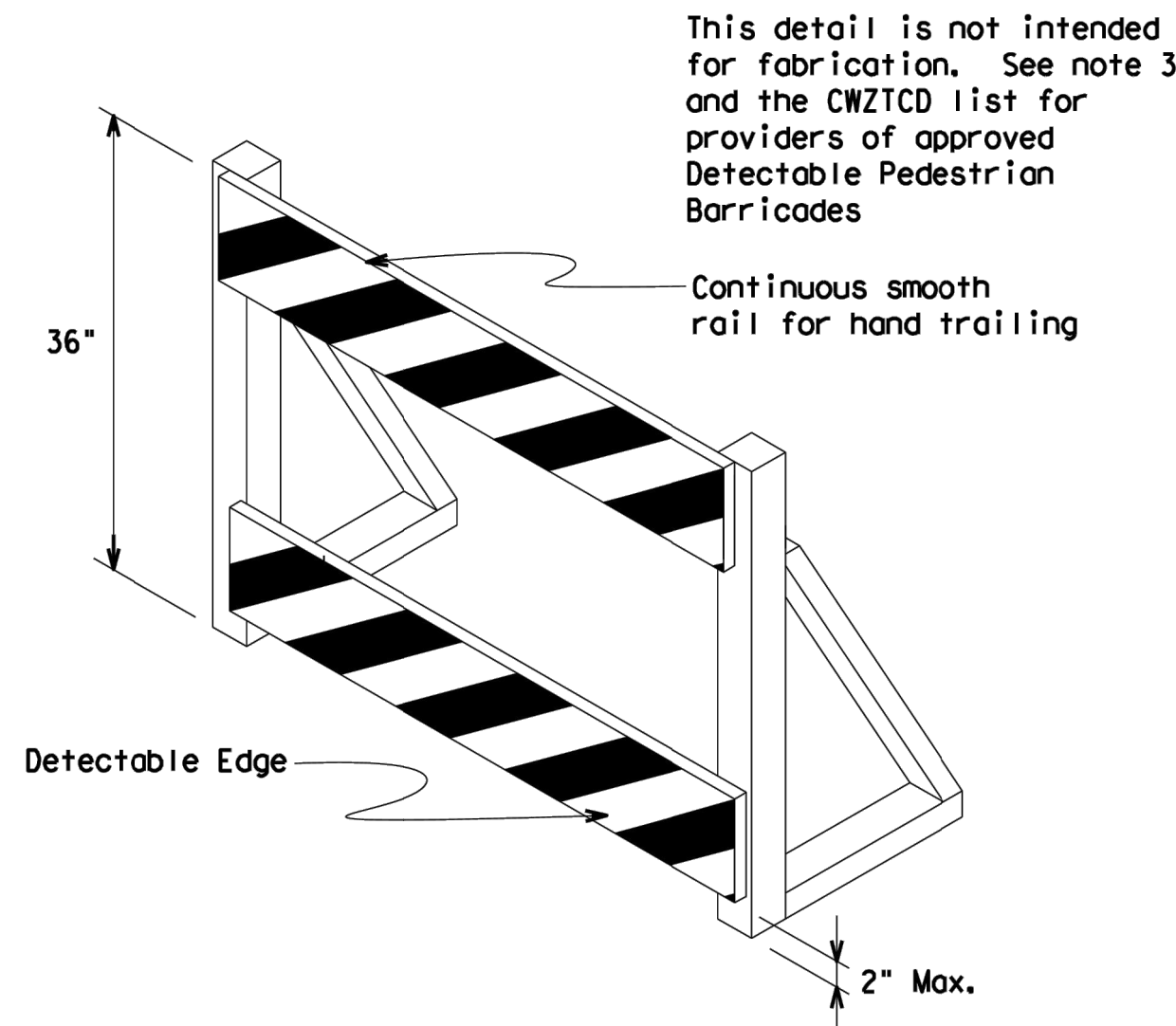
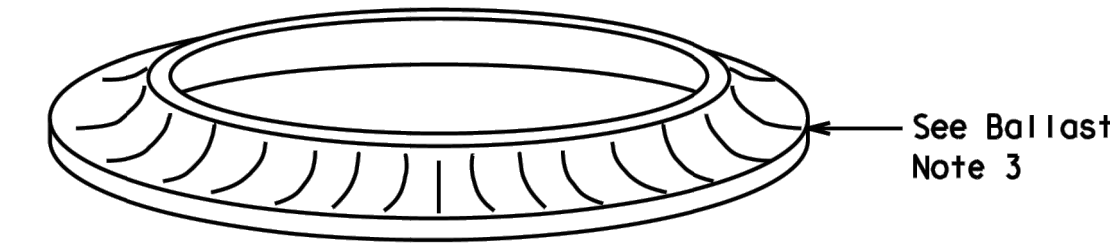
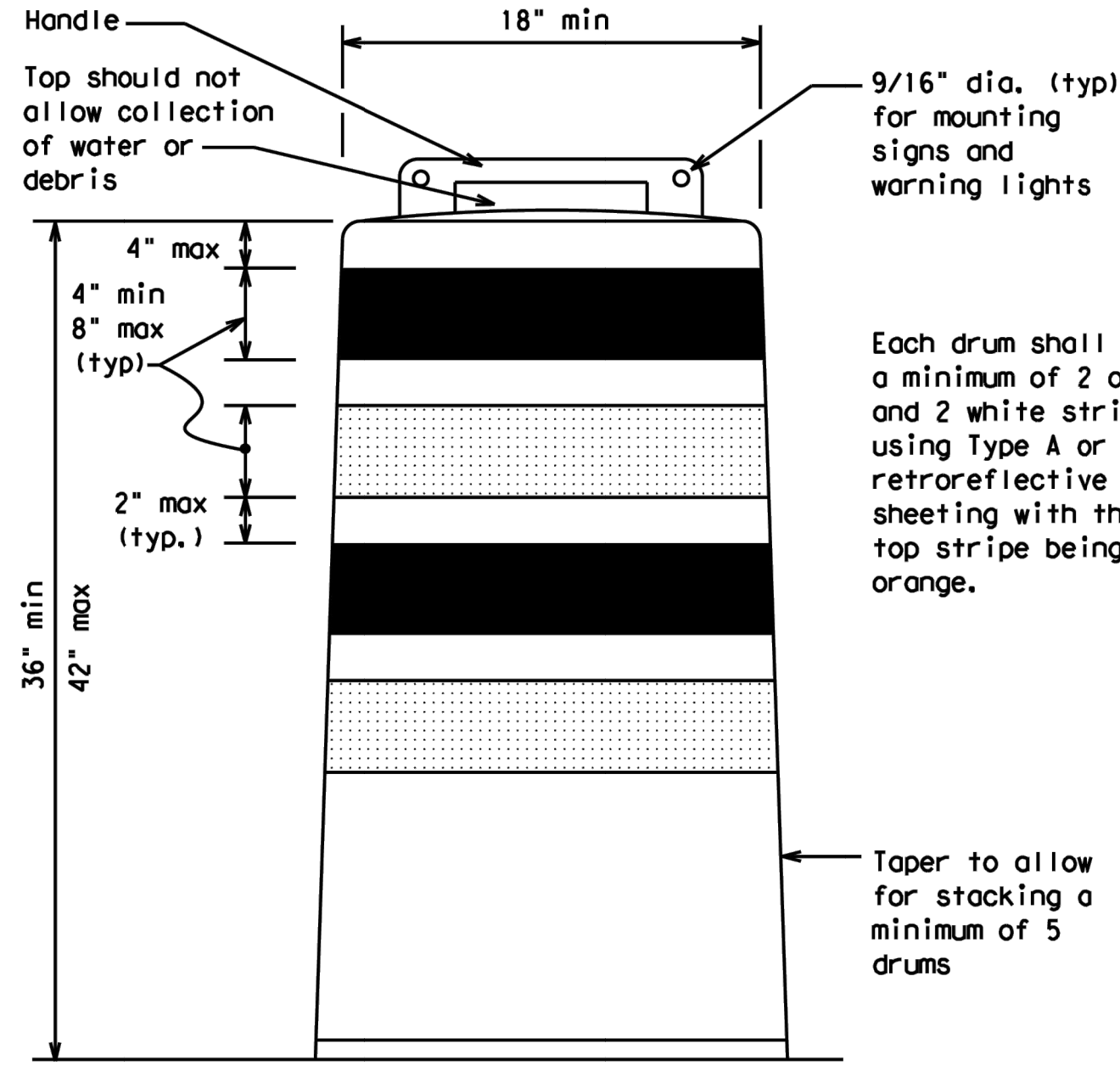
- Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
- The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles.
- Plastic drums shall be constructed of lightweight flexible, and deformable materials. The Contractor shall NOT use metal drums or single piece plastic drums as channelization devices or sign supports.
- Drums shall present a profile that is a minimum of 18 inches in width at the 36 inch height when viewed from any direction. The height of drum unit (body installed on base) shall be a minimum of 36 inches and a maximum of 42 inches.
- The top of the drum shall have a built-in handle for easy pickup and shall be designed to drain water and not collect debris. The handle shall have a minimum of two widely spaced 9/16 inch diameter holes to allow attachment of a warning light, warning reflector unit or approved compliant sign.
- The exterior of the drum body shall have a minimum of four alternating orange and white retroreflective circumferential stripes not less than 4 inches nor greater than 8 inches in width. Any non-reflectORIZED space between any two adjacent stripes shall not exceed 2 inches in width.
- Bases shall have a maximum width of 36 inches, a maximum height of 4 inches, and a minimum of two footholds of sufficient size to allow base to be held down while separating the drum body from the base.
- Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.
- Drum body shall have a maximum unballasted weight of 11 lbs.
- Drum and base shall be marked with manufacturer's name and model number.

**RETROREFLECTIVE SHEETING**

- The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
- The sheeting shall be suitable for use on and shall adhere to the drum surface such that, upon vehicular impact, the sheeting shall remain adhered in-place and exhibit no delaminating, cracking, or loss of retroreflectivity other than that loss due to abrasion of the sheeting surface.

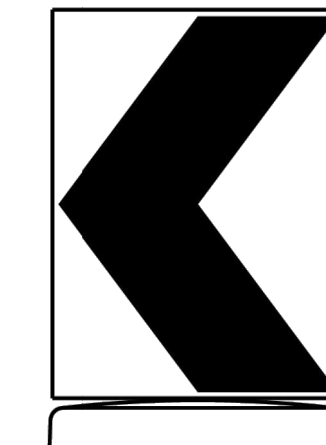
**BALLAST**

- Unballasted bases shall be large enough to hold up to 50 lbs. of sand. This base, when filled with the ballast material, should weigh between 35 lbs (minimum) and 50 lbs (maximum). The ballast may be sand in one to three sandbags separate from the base, sand in a sand-filled plastic base, or other ballasting devices as approved by the Engineer. Stacking of sandbags will be allowed, however height of sandbags above pavement surface may not exceed 12 inches.
- Bases with built-in ballast shall weigh between 40 lbs. and 50 lbs. Built-in ballast can be constructed of an integral crumb rubber base or a solid rubber base.
- Recycled truck tire sidewalls may be used for ballast on drums approved for this type of ballast on the CWZTCD list.
- The ballast shall not be heavy objects, water, or any material that would become hazardous to motorists, pedestrians, or workers when the drum is struck by a vehicle.
- When used in regions susceptible to freezing, drums shall have drainage holes in the bottoms so that water will not collect and freeze becoming a hazard when struck by a vehicle.
- Ballast shall not be placed on top of drums.
- Adhesives may be used to secure base of drums to pavement.

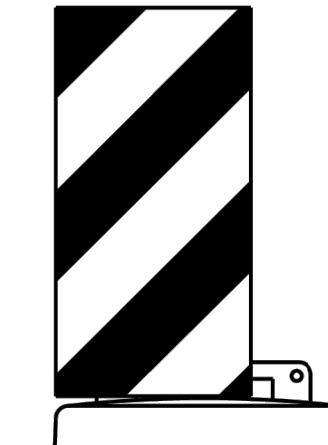


**DETECTABLE PEDESTRIAN BARRICADES**

- When existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility. Refer to WZ(BTS-2) for Pedestrian Control requirements for Sidewalk Diversions, Sidewalk Detours and Crosswalk Closures.
- Where pedestrians with visual disabilities normally use the closed sidewalk, a Detectable Pedestrian Barricade shall be placed across the full width of the closed sidewalk instead of a Type 3 Barricade.
- Detectable pedestrian barricades similar to the one pictured above, longitudinal channelizing devices, some concrete barriers, and wood or chain link fencing with a continuous detectable edging can satisfactorily delineate a pedestrian path.
- Tape, rope, or plastic chain strung between devices are not detectable, do not comply with the design standards in the "Americans with Disabilities Act Accessibility Guidelines (ADAAG)" and should not be used as a control for pedestrian movements.
- Warning lights shall not be attached to detectable pedestrian barricades.
- Detectable pedestrian barricades should use 8" nominal barricade rails as shown on BC(10) provided that the top rail provides a smooth continuous rail suitable for hand trailing with no splinters, burrs, or sharp edges.



18" x 24" Sign  
(Maximum Sign Dimension)  
Chevron CWI-8, Opposing Traffic Lane Divider, Driveway sign D70a, Keep Right R4 series or other signs as approved by Engineer



12" x 24" Vertical Panel  
mount with diagonals sloping down towards travel way

Plywood, Aluminum or Metal sign substrates shall NOT be used on plastic drums

**SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS**

- Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
- Chevrons and other work zone signs with an orange background shall be manufactured with Type B_{FL} or Type C_{FL} Orange sheeting meeting the color and retroreflectivity requirements of DMS-8300, "Sign Face Material," unless otherwise specified in the plans.
- Vertical Panels shall be manufactured with orange and white sheeting meeting the requirements of DMS-8300 Type A or Type B. Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
- Other sign messages (text or symbolic) may be used as approved by the Engineer. Sign dimensions shall not exceed 18 inches in width or 24 inches in height, except for the R9 series signs discussed in note 8 below.
- Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
- Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
- Chevrons may be placed on drums on the outside of curves, on merging tapers or on shifting tapers. When used in these locations, they may be placed on every drum or spaced not more than on every third drum. A minimum of three (3) should be used at each location called for in the plans.
- R9-9, R9-10, R9-11 and R9-11a Sidewalk Closed signs which are 24 inches wide may be mounted on plastic drums, with approval of the Engineer.

SHEET 8 OF 12

Texas Department of Transportation Traffic Safety Division Standard

**BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES**

**BC (8) - 21**

FILE:	bc-21.dgn	DN:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT
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REVISIONS									
4-03	8-14								
9-07	5-21								
7-13									

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01/06/2025

STATE OF TEXAS

ABBEY W. POLZIN  
151558

Professional Engineer

City of Galveston

Abbey Polzin

KHA PROJECT	067785106
DATE	AUGUST 2025
SCALE	AS SHOWN
DESIGNED BY:	NMT
DRAWN BY:	NMT
CHECKED BY:	AMP

**CITY OF GALVESTON**

**UTMB EST**

**REHABILITATION**

**TRAFFIC CONTROL**

**DETAILS (10 OF 14)**

SHEET NUMBER

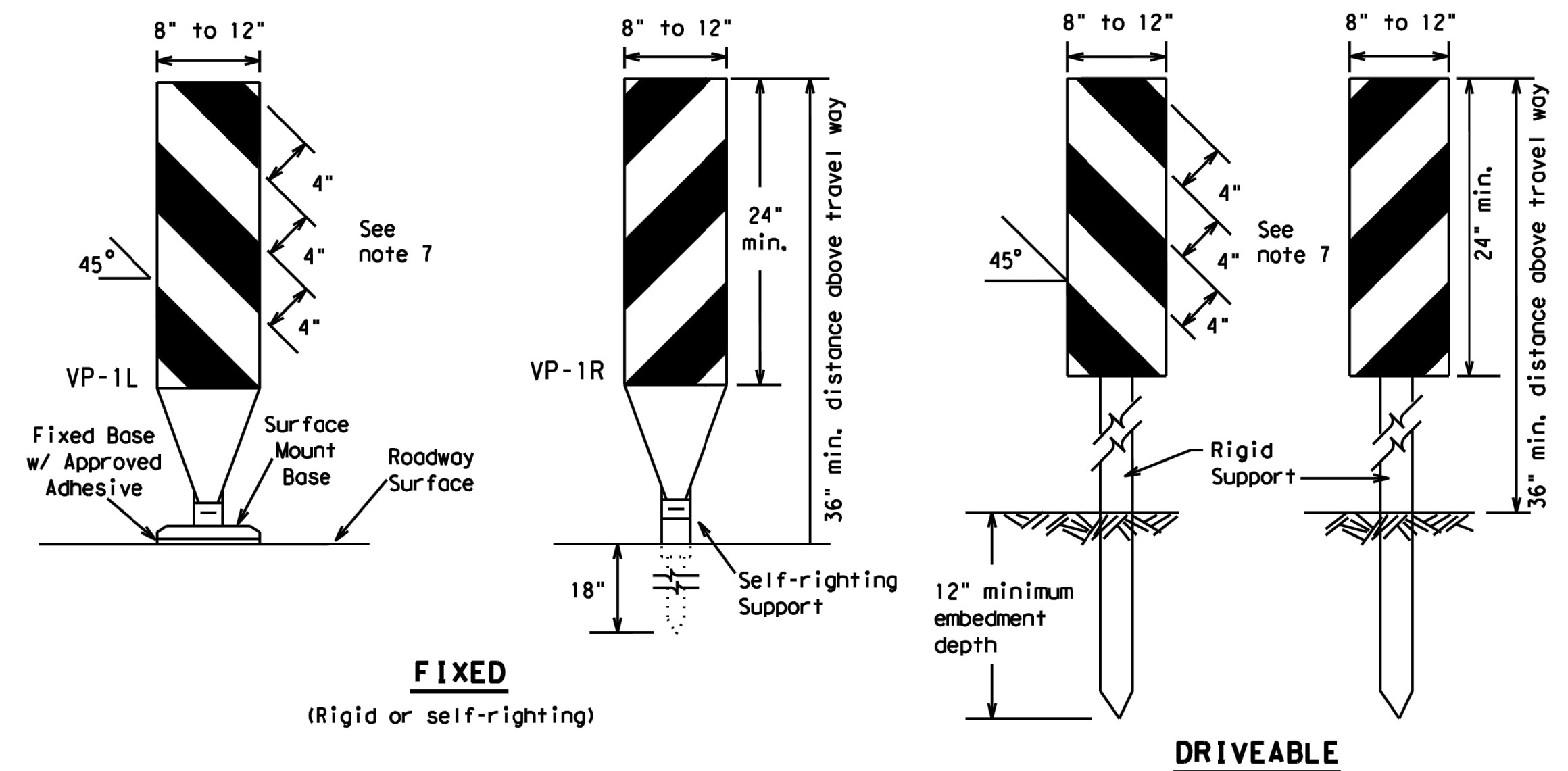
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Plotted, By: 2025-08-20 16:02:19, Baltazar, Victoria  
Last Saved: 2025-01-27 08:27:45 (TRAFFIC CONTROL DETAILS (10 OF 14))  
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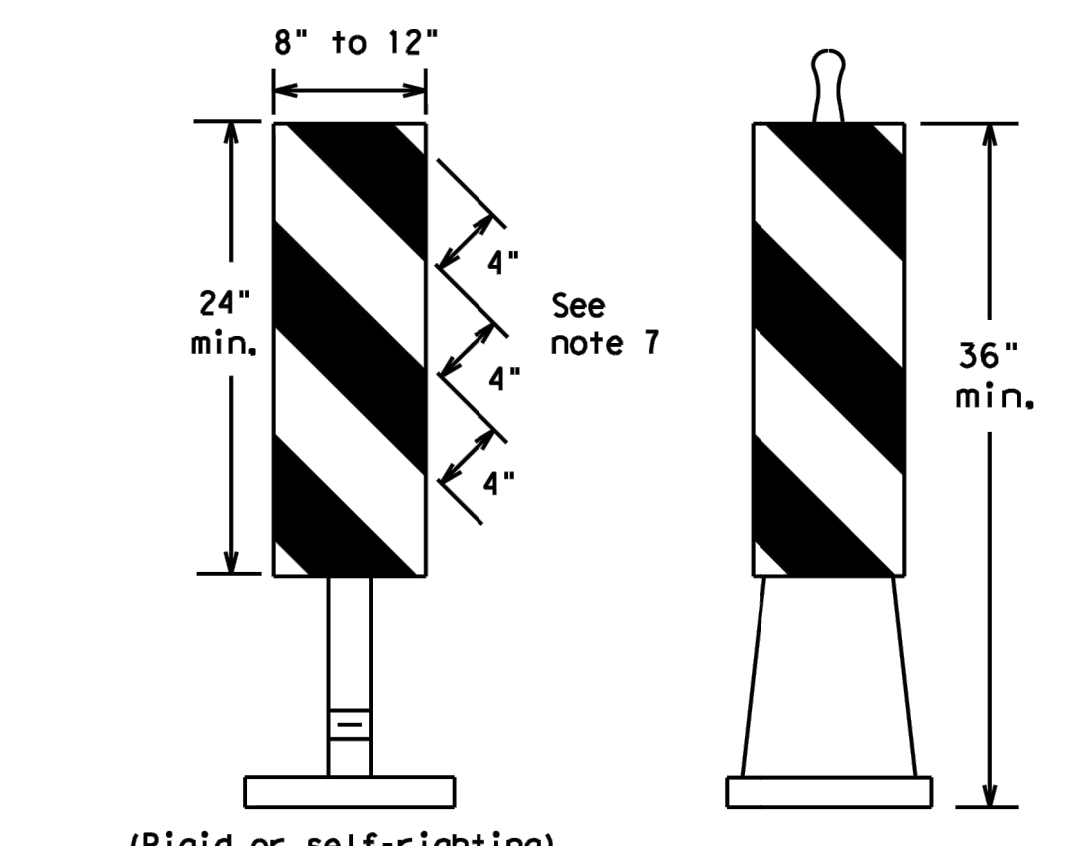
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**FIXED**  
(Rigid or self-righting)

**DRIVEABLE**

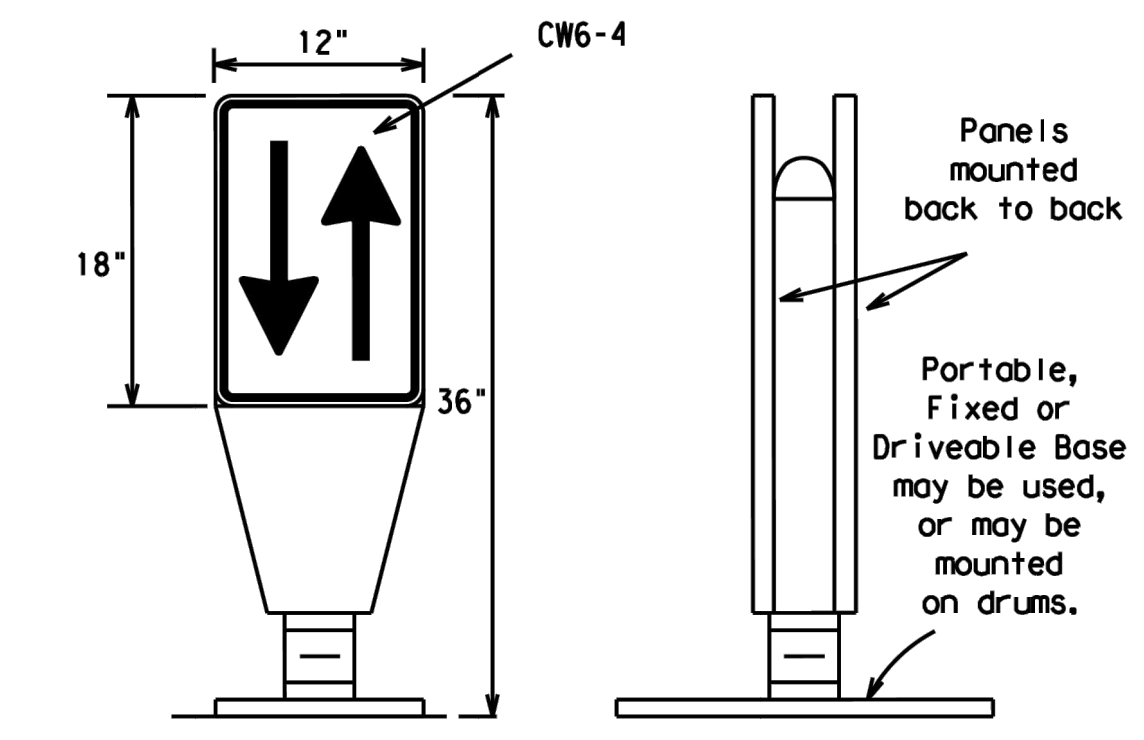


(Rigid or self-righting)

**PORTABLE**

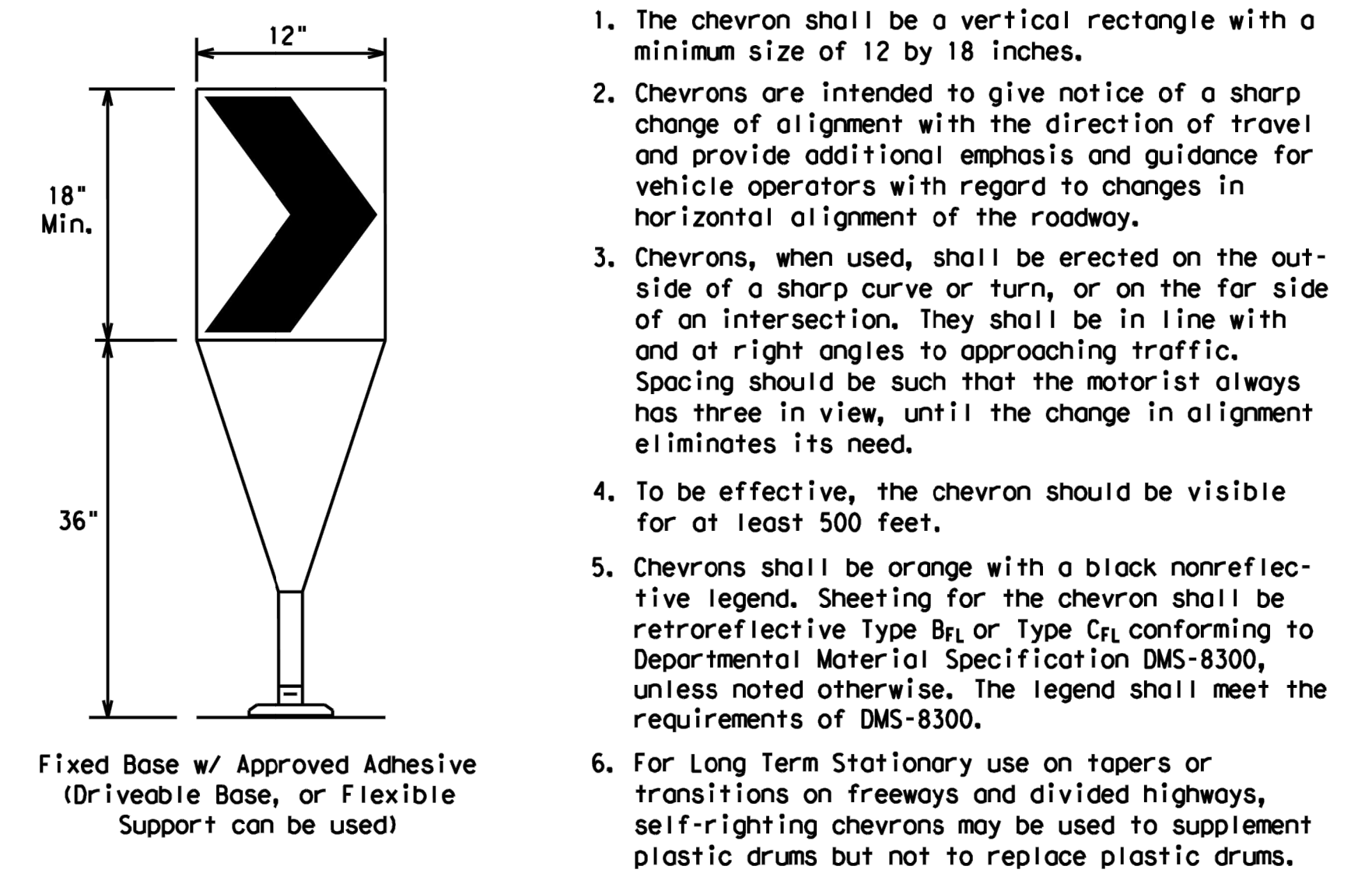
**VERTICAL PANELS (VPs)**

- Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
- VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is required. The Engineer/Inspector shall refer to the Roadway Design Manual for additional requirements on the use VP's for drop-offs.
- VP's should be mounted back to back if used at the edge of cuts adjacent to two-way two lane roadways. Stripes are to be reflective orange and reflective white and should always slope downward toward the travel lane.
- VP's used on expressways and freeways or other high speed roadways, may have more than 270 square inches of retroreflective area facing traffic.
- Self-righting supports are available with portable base. See "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
- Sheeting for the VP's shall be retroreflective Type A or Type B conforming to Departmental Material Specification DMS-8300, unless noted otherwise.
- Where the height of reflective material on the vertical panel is 36 inches or greater, a panel stripe of 6 inches shall be used.



**OPPOSING TRAFFIC LANE DIVIDERS (OTLD)**

- Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The base is secured to the pavement with an adhesive or rubber weight to minimize movement caused by a vehicle impact or wind gust.
- The OTLD may be used in combination with 42" cones or VPs.
- Spacing between the OTLD shall not exceed 500 feet. 42" cones or VPs placed between the OTLD's should not exceed 100 foot spacing.
- The OTLD shall be orange with a black non-reflective legend. Sheeting for the OTLD shall be retroreflective Type B_{FL} or Type C_{FL} conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.

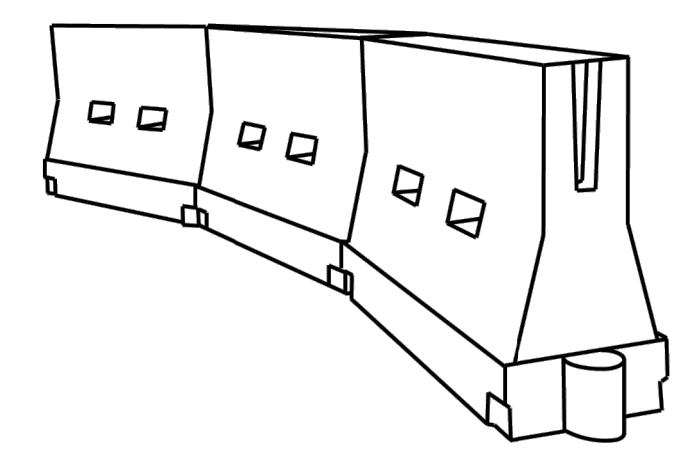


Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

**CHEVRONS**

- The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
- Chevrons are intended to give notice of a sharp change of alignment with the direction of travel and provide additional emphasis and guidance for vehicle operators with regard to changes in horizontal alignment of the roadway.
- Chevrons, when used, shall be erected on the outside of a sharp curve or turn, or on the far side of an intersection. They shall be in line with and at right angles to approaching traffic. Spacing should be such that the motorist always has three in view, until the change in alignment eliminates its need.
- To be effective, the chevron should be visible for at least 500 feet.
- Chevrons shall be orange with a black nonreflective legend. Sheeting for the chevron shall be retroreflective Type B_{FL} or Type C_{FL} conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.
- For Long Term Stationary use on tapers or transitions on freeways and divided highways, self-righting chevrons may be used to supplement plastic drums but not to replace plastic drums.

**LONGITUDINAL CHANNELIZING DEVICES (LCD)**



- LCDs are crashworthy, lightweight, deformable devices that are highly visible, have good target value and can be connected together. They are not designed to contain or redirect a vehicle on impact.
- LCDs may be used instead of a line of cones or drums.
- LCDs shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
- LCDs should not be used to provide positive protection for obstacles, pedestrians or workers.
- LCDs shall be supplemented with retroreflective delineation as required for temporary barriers on BC(7) when placed roughly parallel to the travel lanes.
- LCDs used as barricades placed perpendicular to traffic should have at least one row of reflective sheeting meeting the requirements for barricade rails as shown on BC(10). Place reflective sheeting near the top of the LCD along the full length of the device.

**WATER BALLASTED SYSTEMS USED AS BARRIERS**

- Water ballasted systems used as barriers shall not be used solely to channelize road users, but also to protect the work space per the appropriate Manual for Assessing Safety Hardware (MASH) crashworthiness requirements based on roadway speed and barrier application.
- Water ballasted systems used to channelize vehicular traffic shall be supplemented with retroreflective delineation or channelizing devices to improve daytime/nighttime visibility. They may also be supplemented with pavement markings.
- Water ballasted systems used as barriers shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
- Water ballasted systems used as barriers should not be used for a merging taper except in low speed (less than 45 MPH) urban areas. When used on a taper in a low speed urban area, the taper shall be delineated and the taper length should be designed to optimize road user operations considering the available geometric conditions.
- When water ballasted systems used as barriers have blunt ends exposed to traffic, they should be attenuated as per manufacturer recommendations or flared to a point outside the clear zone.

If used to channelize pedestrians, longitudinal channelizing devices or water ballasted systems must have a continuous detectable bottom for users of long cones and the top of the unit shall not be less than 32 inches in height.

**HOLLOW OR WATER BALLASTED SYSTEMS USED AS LONGITUDINAL CHANNELIZING DEVICES OR BARRIERS**

**GENERAL NOTES**

- Work Zone channelizing devices illustrated on this sheet may be installed in close proximity to traffic and are suitable for use on high or low speed roadways. The Engineer/Inspector shall ensure that spacing and placement is uniform and in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
- Channelizing devices shown on this sheet may have a driveable, fixed or portable base. The requirement for self-righting channelizing devices must be specified in the General Notes or other plan sheets.
- Channelizing devices on self-righting supports should be used in work zone areas where channelizing devices are frequently impacted by errant vehicles or vehicle related wind gusts making alignment of the channelizing devices difficult to maintain. Locations of these devices shall be detailed elsewhere in the plans. These devices shall conform to the TMUTCD and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
- The Contractor shall maintain devices in a clean condition and replace damaged, nonreflective, faded, or broken devices and bases as required by the Engineer/Inspector. The Contractor shall be required to maintain proper device spacing and alignment.
- Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh a minimum of 30 lbs.
- Pavement surfaces shall be prepared in a manner that ensures proper bonding between the adhesives, the fixed mount bases and the pavement surface. Adhesives shall be prepared and applied according to the manufacturer's recommendations.
- The installation and removal of channelizing devices shall not cause detrimental effects to the final pavement surfaces, including pavement surface discoloration or surface integrity. Driveable bases shall not be permitted on final pavement surfaces. The Engineer/Inspector shall approve all application and removal procedures of fixed bases.

Posted Speed	Formula	Minimum Desirable Taper Lengths			Suggested Maximum Spacing of Channelizing Devices	
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent
30	L = WS ² / 60	150'	165'	180'	30'	60'
35		205'	225'	245'	35'	70'
40		265'	295'	320'	40'	80'
45	L = WS	450'	495'	540'	45'	90'
50		500'	550'	600'	50'	100'
55		550'	605'	660'	55'	110'
60		600'	660'	720'	60'	120'
65		650'	715'	780'	65'	130'
70		700'	770'	840'	70'	140'
75		750'	825'	900'	75'	150'
80	800'	880'	960'	80'	160'	

*Taper lengths have been rounded off.  
 L=Length of Taper (FT.) W=Width of Offset (FT.)  
 S=Posted Speed (MPH)

**SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS**

SHEET 9 OF 12



**BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES**

**BC (9) - 21**

FILE# bc-21.dgn	DN# TxDOT	CK# TxDOT	DW# TxDOT	CK# TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
9-07 8-14	DIST		COUNTY	SHEET NO.
7-13 5-21				

REVISIONS

No.	DATE	BY

**Kimley-Horn**

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 11700 KATY FREEMAN SUITE 800 HOUSTON, TX 77079  
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01/06/2025

STATE OF TEXAS  
 ABNEY W. POLZIN  
 151558  
 PROFESSIONAL ENGINEER  
 CIVIL  
 ASSESSOR

Abbey Polzin

KHA PROJECT 067785106  
 DATE AUGUST 2025  
 SCALE AS SHOWN  
 DESIGNED BY: NMT  
 DRAWN BY: NMT  
 CHECKED BY: AMP

**CITY OF GALVESTON  
 UTMB EST  
 REHABILITATION**

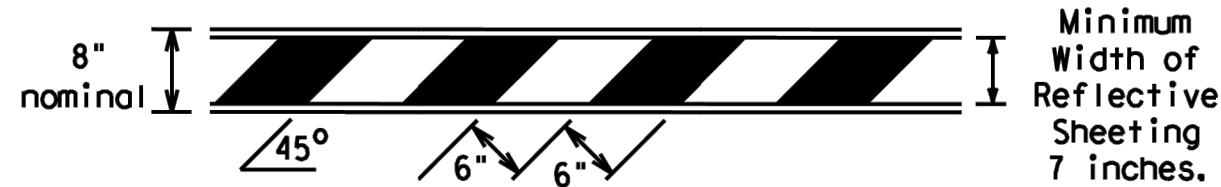
**TRAFFIC CONTROL  
 DETAILS (11 OF 14)**

SHEET NUMBER  
**C-27**

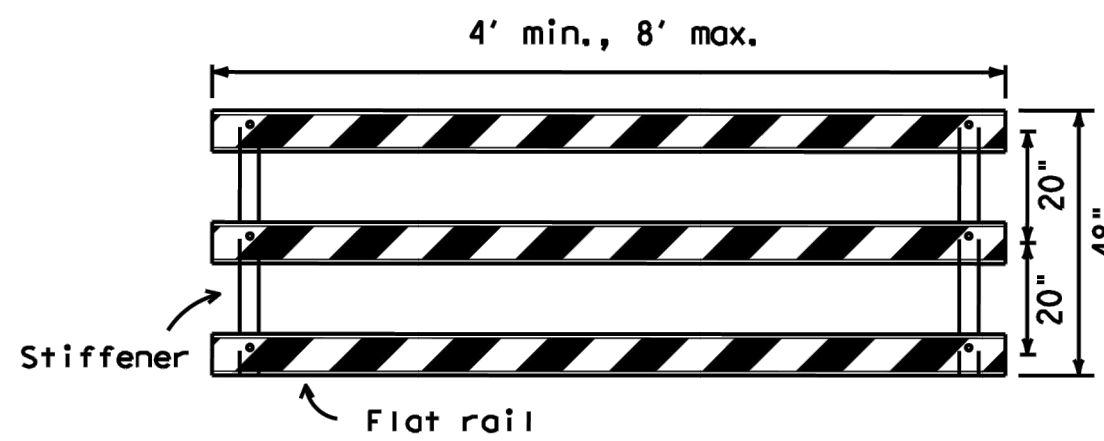
**TYPE 3 BARRICADES**

1. Refer to the Compliant Work Zone Traffic Control Devices List (CWZTCD) for details of the Type 3 Barricades and a list of all materials used in the construction of Type 3 Barricades.
2. Type 3 Barricades shall be used at each end of construction projects closed to all traffic.
3. Barricades extending across a roadway should have stripes that slope downward in the direction toward which traffic must turn in detouring. When both right and left turns are provided, the chevron striping may slope downward in both directions from the center of the barricade. Where no turns are provided at a closed road, striping should slope downward in both directions toward the center of roadway.
4. Striping of rails, for the right side of the roadway, should slope downward to the left. For the left side of the roadway, striping should slope downward to the right.
5. Identification markings may be shown only on the back of the barricade rails. The maximum height of letters and/or company logos used for identification shall be 1".
6. Barricades shall not be placed parallel to traffic unless an adequate clear zone is provided.
7. Warning lights shall NOT be installed on barricades.
8. Where barricades require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand is recommended. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight. Sand bags shall not be stacked in a manner that covers any portion of a barricade rails reflective sheeting. Rock, concrete, iron, steel or other solid objects will NOT be permitted. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall not be used for sandbags. Sandbags shall only be placed along or upon the base supports of the device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners.
9. Sheeting for barricades shall be retroreflective Type A or Type B conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.

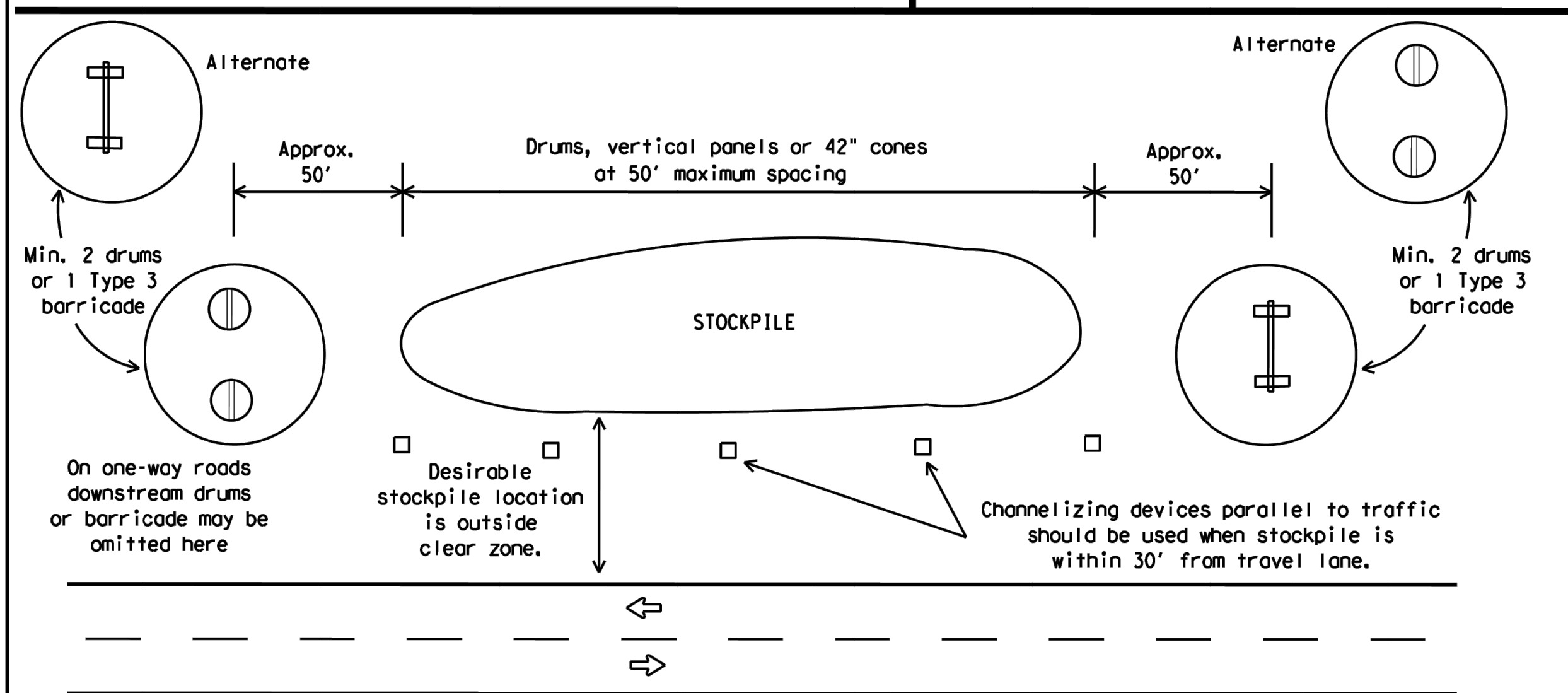


**TYPICAL STRIPING DETAIL FOR BARRICADE RAIL**



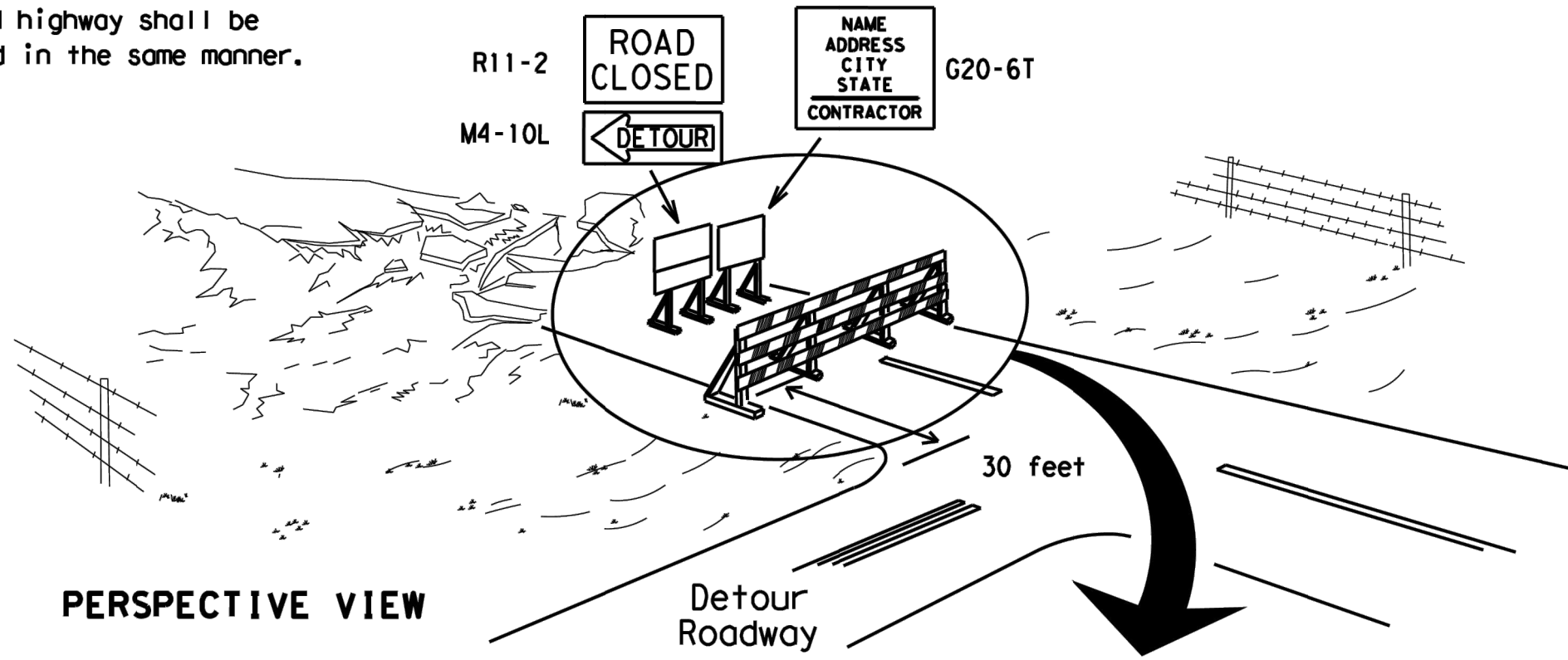
Stiffener may be inside or outside of support, but no more than 2 stiffeners shall be allowed on one barricade.

**TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES**



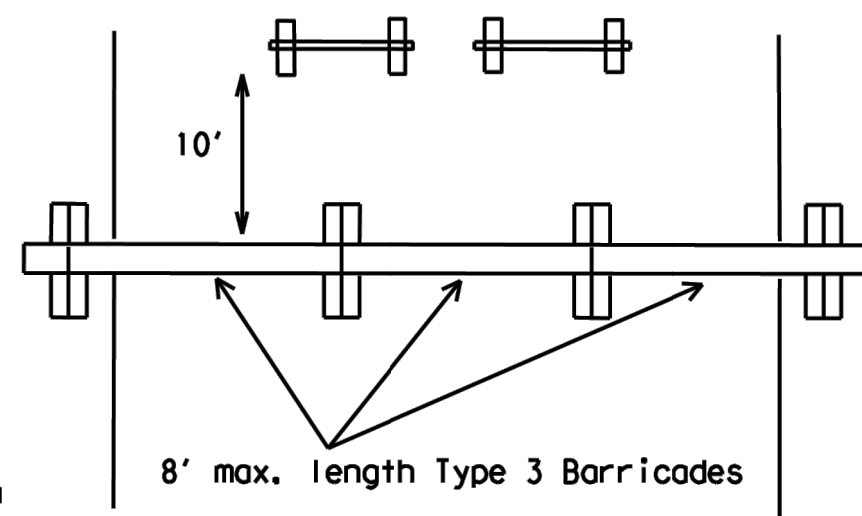
**TRAFFIC CONTROL FOR MATERIAL STOCKPILES**

Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

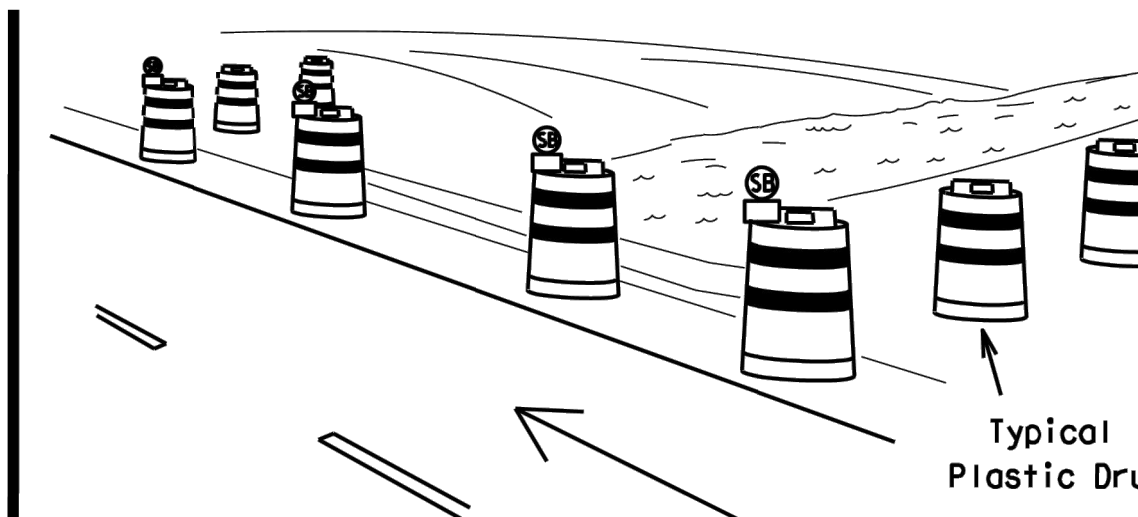
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic. Barricade striping should slant downward in the direction of detour.



PLAN VIEW

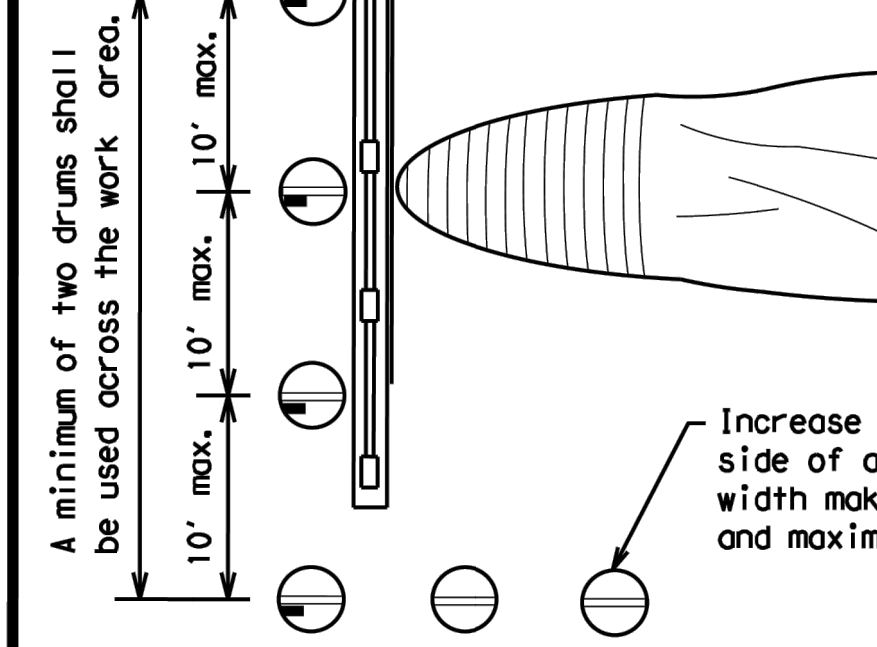
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

**TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION**



PERSPECTIVE VIEW

These drums are not required on one-way roadway

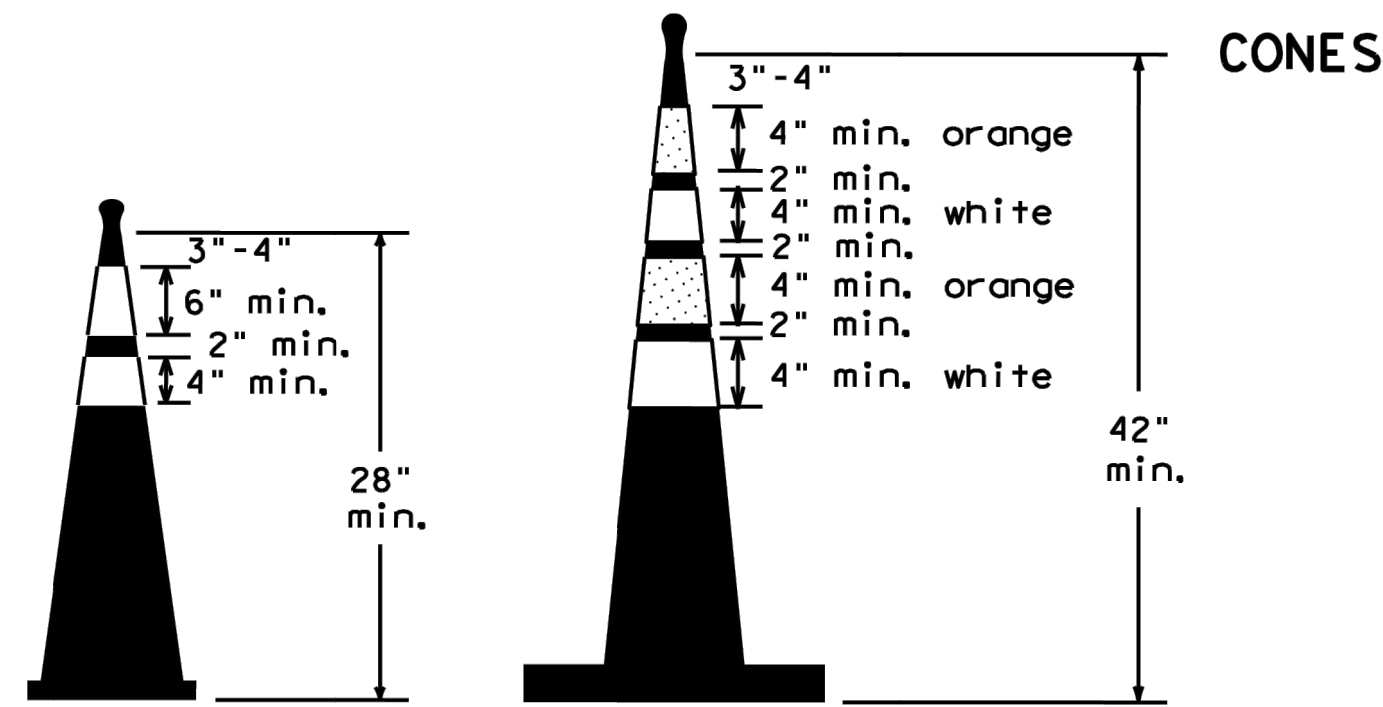


PLAN VIEW

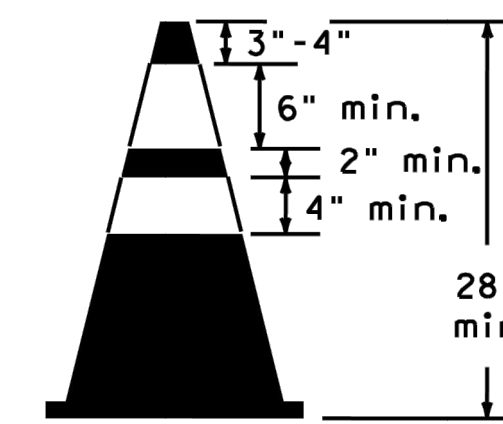
Increase number of plastic drums on the side of approaching traffic if the crown width makes it necessary. (minimum of 2 and maximum of 4 drums)

LEGEND	
	Plastic drum
	Plastic drum with steady burn light or yellow warning reflector
	Steady burn warning light or yellow warning reflector

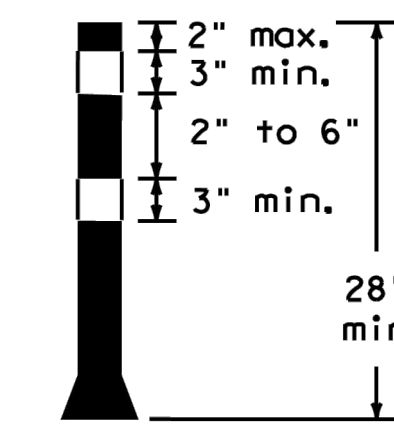
**CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS**



Two-Piece cones



One-Piece cones



Tubular Marker

28" Cones shall have a minimum weight of 9 1/2 lbs.  
42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

1. Traffic cones and tubular markers shall be predominantly orange, and meet the height and weight requirements shown above.
2. One-piece cones have the body and base of the cone molded in one consolidated unit. Two-piece cones have a cone shaped body and a separate rubber base, or ballast, that is added to keep the device upright and in place.
3. Two-piece cones may have a handle or loop extending up to 8" above the minimum height shown, in order to aid in retrieving the device.
4. Cones or tubular markers shall have white or white and orange reflective bands as shown above. The reflective bands shall have a smooth, sealed outer surface and meet the requirements of Departmental Material Specification DMS-8300 Type A or Type B.
5. 28" cones and tubular markers are generally suitable for short duration and short-term stationary work as defined on BC(4). These should not be used for intermediate-term or long-term stationary work unless personnel is on-site to maintain them in their proper upright position.
6. 42" two-piece cones, vertical panels or drums are suitable for all work zone durations.
7. Cones or tubular markers used on each project should be of the same size and shape.

SHEET 10 OF 12

Texas Department of Transportation Traffic Safety Division Standard

**BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES**

**BC (10) -21**

FILE# bc-21.dgn	DN# TxDOT	CK# TxDOT	DW# TxDOT	CK# TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
9-07 8-14	DIST		COUNTY	SHEET NO.
7-13 5-21				

DATE BY

REVISIONS

No.

**Kimley»Horn**

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01/06/2025

STATE OF TEXAS  
ABBEY W. POLZIN  
151558  
Professional Engineer  
Civil Engineering

Abbey Polzin

KHA PROJECT 067785106

DATE AUGUST 2025

SCALE AS SHOWN

DESIGNED BY: NMT

DRAWN BY: NMT

CHECKED BY: AMP

**CITY OF GALVESTON**  
**UTMB EST**  
**REHABILITATION**

**TRAFFIC CONTROL**  
**DETAILS (12 OF 14)**

SHEET NUMBER  
**C-28**

Plotted By: 2025-08-20 16:02:41, Baltazar, Victoria  
 Last Saved: 2025-01-27 08:27:45 (TRAFFIC CONTROL DETAILS (12 OF 14))  
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## WORK ZONE PAVEMENT MARKINGS

### GENERAL

- The Contractor shall be responsible for maintaining work zone and existing pavement markings, in accordance with the standard specifications and special provisions, on all roadways open to traffic within the CSJ limits unless otherwise stated in the plans.
- Color, patterns and dimensions shall be in conformance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
- Additional supplemental pavement marking details may be found in the plans or specifications.
- Pavement markings shall be installed in accordance with the TMUTCD and as shown on the plans.
- When short term markings are required on the plans, short term markings shall conform with the TMUTCD, the plans and details as shown on the Standard Plan Sheet WZ(STPM).
- When standard pavement markings are not in place and the roadway is opened to traffic, DO NOT PASS signs shall be erected to mark the beginning of the sections where passing is prohibited and PASS WITH CARE signs at the beginning of sections where passing is permitted.
- All work zone pavement markings shall be installed in accordance with Item 662, "Work Zone Pavement Markings."

### RAISED PAVEMENT MARKERS

- Raised pavement markers are to be placed according to the patterns on BC(12).
- All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and Departmental Material Specification DMS-4200 or DMS-4300.

### PREFABRICATED PAVEMENT MARKINGS

- Removable prefabricated pavement markings shall meet the requirements of DMS-8241.
- Non-removable prefabricated pavement markings (foil back) shall meet the requirements of DMS-8240.

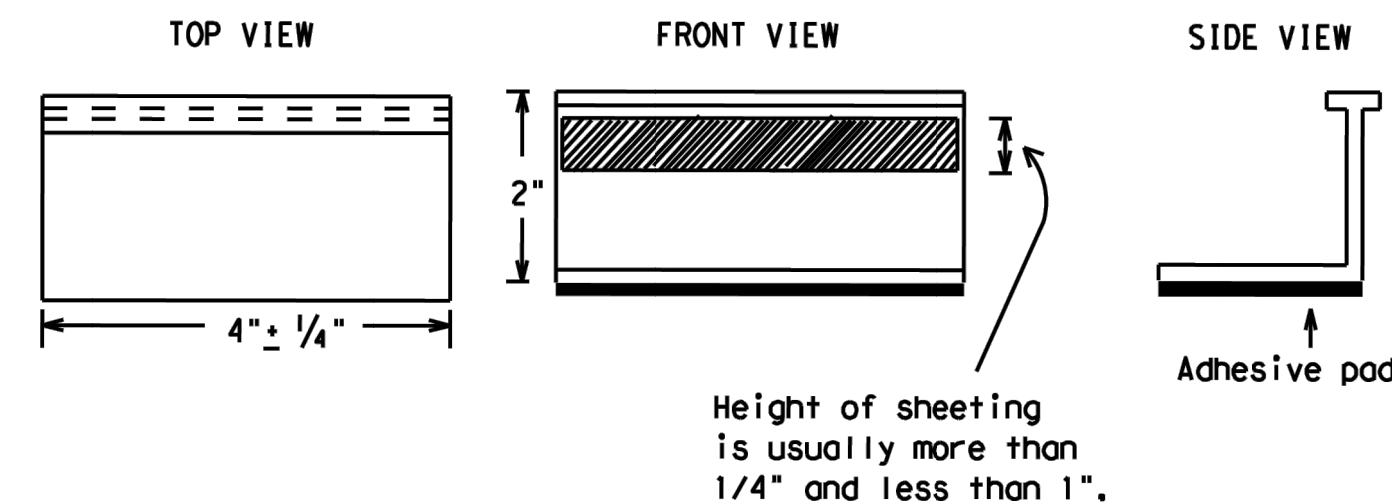
### MAINTAINING WORK ZONE PAVEMENT MARKINGS

- The Contractor will be responsible for maintaining work zone pavement markings within the work limits.
- Work zone pavement markings shall be inspected in accordance with the frequency and reporting requirements of work zone traffic control device inspections as required by Form 599.
- The markings should provide a visible reference for a minimum distance of 300 feet during normal daylight hours and 160 feet when illuminated by automobile low-beam headlights at night, unless sight distance is restricted by roadway geometrics.
- Markings failing to meet this criteria within the first 30 days after placement shall be replaced at the expense of the Contractor as per Specification Item 662.

### REMOVAL OF PAVEMENT MARKINGS

- Pavement markings that are no longer applicable, could create confusion or direct a motorist toward or into the closed portion of the roadway shall be removed or obliterated before the roadway is opened to traffic.
- The above shall not apply to detours in place for less than three days, where flaggers and/or sufficient channelizing devices are used in lieu of markings to outline the detour route.
- Pavement markings shall be removed to the fullest extent possible, so as not to leave a discernable marking. This shall be by any method approved by TxDOT Specification Item 677 for "Eliminating Existing Pavement Markings and Markers".
- The removal of pavement markings may require resurfacing or seal coating portions of the roadway as described in Item 677.
- Subject to the approval of the Engineer, any method that proves to be successful on a particular type pavement may be used.
- Blast cleaning may be used but will not be required unless specifically shown in the plans.
- Over-painting of the markings SHALL NOT BE permitted.
- Removal of raised pavement markers shall be as directed by the Engineer.
- Removal of existing pavement markings and markers will be paid for directly in accordance with Item 677, "ELIMINATING EXISTING PAVEMENT MARKINGS AND MARKERS," unless otherwise stated in the plans.
- Black-out marking tape may be used to cover conflicting existing markings for periods less than two weeks when approved by the Engineer.

## Temporary Flexible-Reflective Roadway Marker Tabs



**STAPLES OR NAILS SHALL NOT BE USED TO SECURE  
TEMPORARY FLEXIBLE-REFLECTIVE ROADWAY MARKER  
TABS TO THE PAVEMENT SURFACE**

- Temporary flexible-reflective roadway marker tabs used as guidemarks shall meet the requirements of DMS-8242.
- Tabs detailed on this sheet are to be inspected and accepted by the Engineer or designated representative. Sampling and testing is not normally required, however at the option of the Engineer, either "A" or "B" below may be imposed to assure quality before placement on the roadway.
  - Select five (5) or more tabs at random from each lot or shipment and submit to the Construction Division, Materials and Pavement Section to determine specification compliance.
  - Select five (5) tabs and perform the following test. Affix five (5) tabs at 24 inch intervals on an asphaltic pavement in a straight line. Using a medium size passenger vehicle or pickup, run over the markers with the front and rear tires at a speed of 35 to 40 miles per hour, four (4) times in each direction. No more than one (1) out of the five (5) reflective surfaces shall be lost or displaced as a result of this test.
- Small design variances may be noted between tab manufacturers.
- See Standard Sheet WZ(STPM) for tab placement on new pavements. See Standard Sheet TCP(7-1) for tab placement on seal coat work.

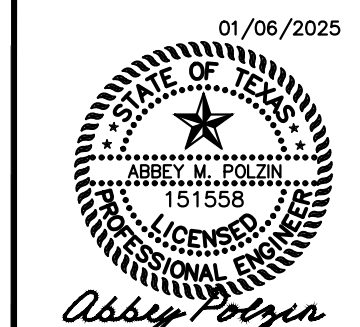
### RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

- Raised pavement markers used as guidemarks shall be from the approved product list, and meet the requirements of DMS-4200.
- All temporary construction raised pavement markers provided on a project shall be of the same manufacturer.
- Adhesive for guidemarks shall be bituminous material hot applied or butyl rubber pad for all surfaces, or thermoplastic for concrete surfaces.

Guidemarks shall be designated as:  
 YELLOW - (two amber reflective surfaces with yellow body).  
 WHITE - (one silver reflective surface with white body).

DEPARTMENTAL MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
TRAFFIC BUTTONS	DMS-4300
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY REMOVABLE, PREFABRICATED PAVEMENT MARKINGS	DMS-8241
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS	DMS-8242

A list of prequalified reflective raised pavement markers, non-reflective traffic buttons, roadway marker tabs and other pavement markings can be found at the Material Producer List web address shown on BC(1).



KHA PROJECT	DATE	SCALE	DESIGNED BY	DRAWN BY	CHECKED BY
067785106	AUGUST 2025	AS SHOWN	NMT	NMT	AMP

**CITY OF GALVESTON  
UTMB EST  
REHABILITATION**

**TRAFFIC CONTROL  
DETAILS (13 OF 14)**

SHEET NUMBER  
**C-29**

SHEET 11 OF 12

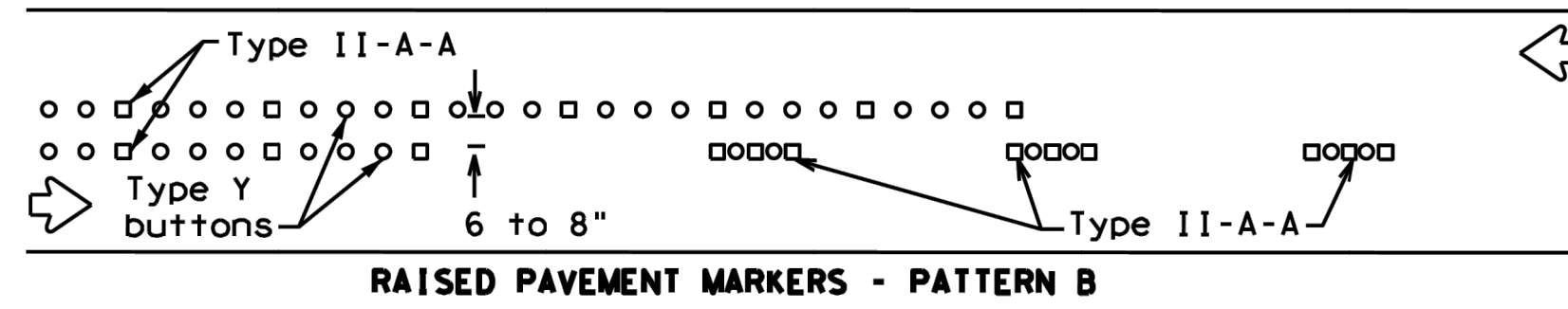
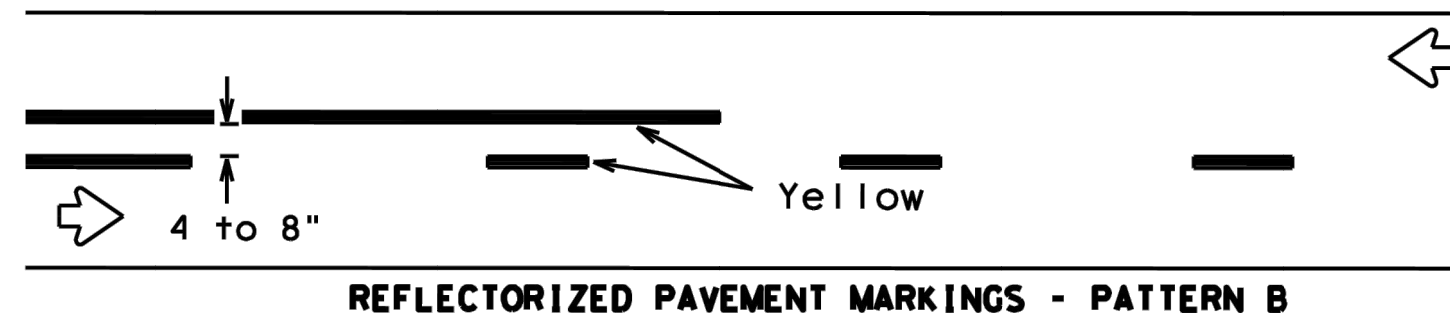
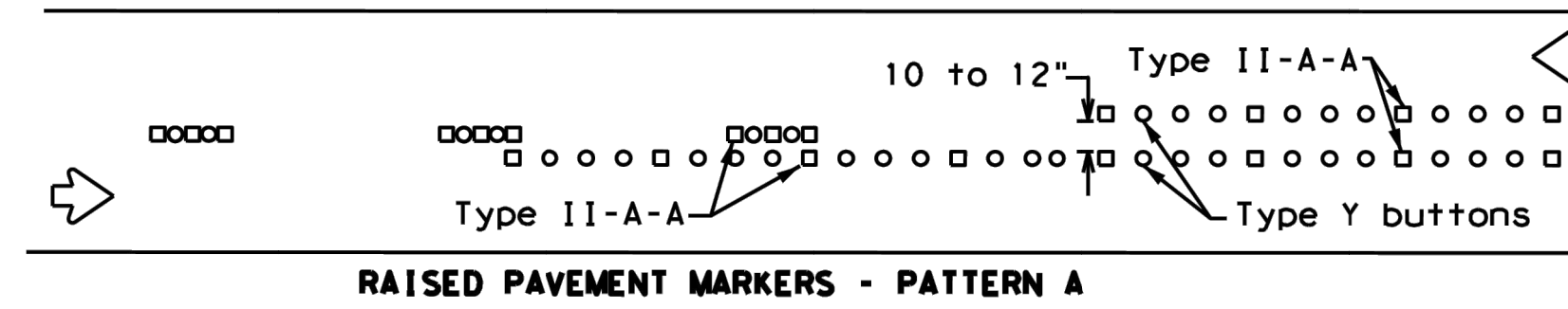
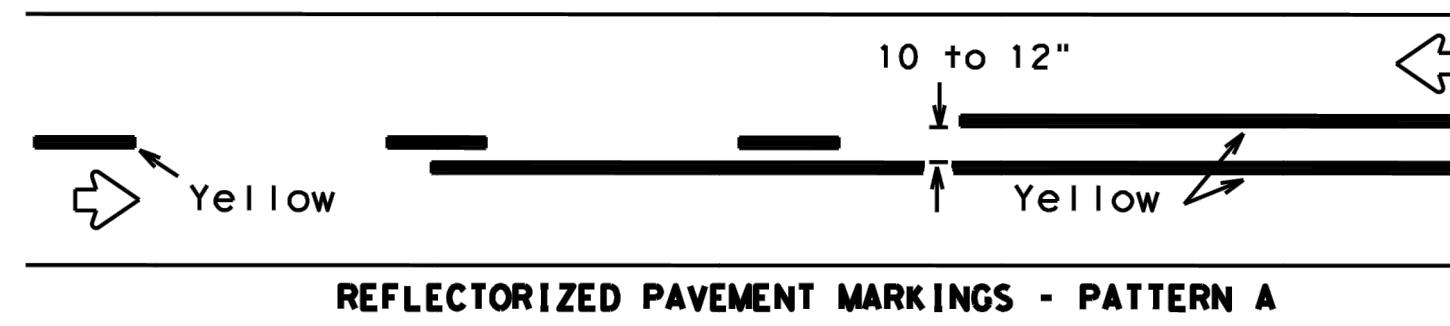


**BARRICADE AND CONSTRUCTION  
PAVEMENT MARKINGS**

**BC(11)-21**

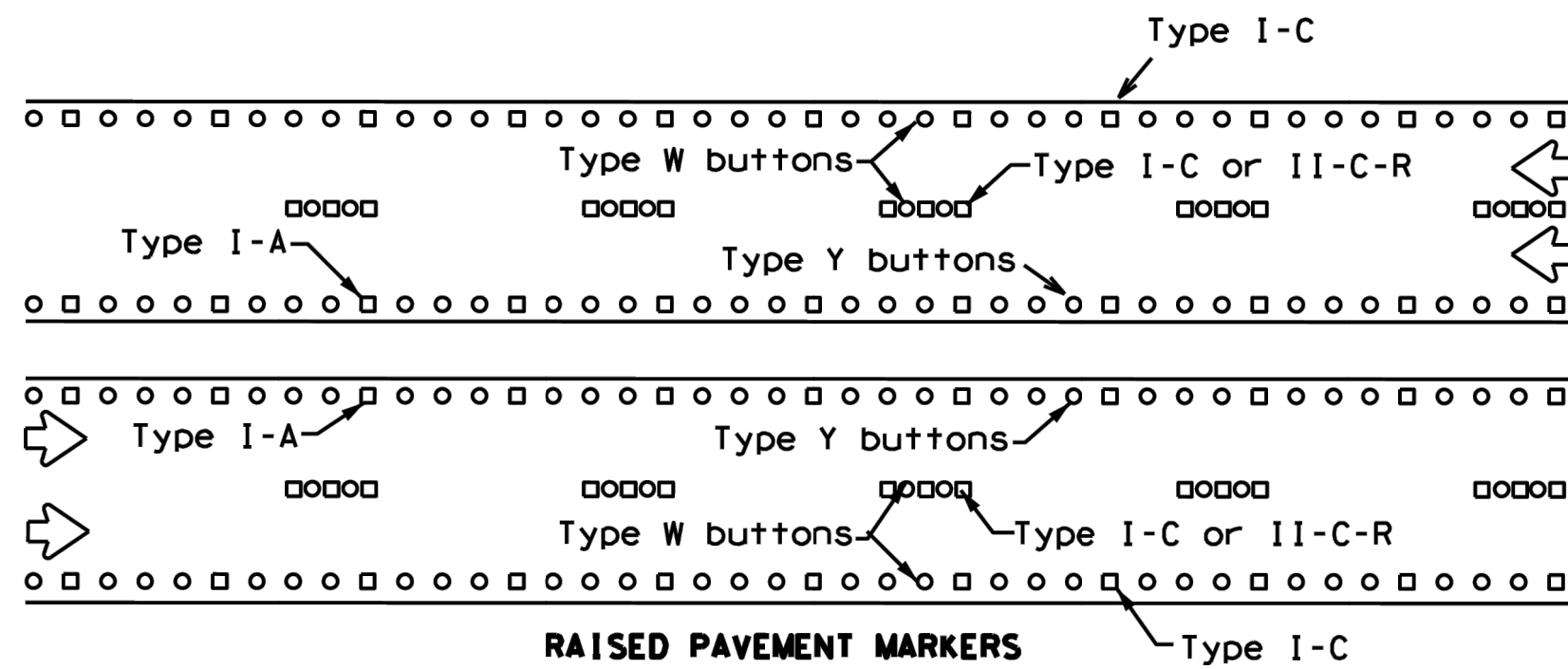
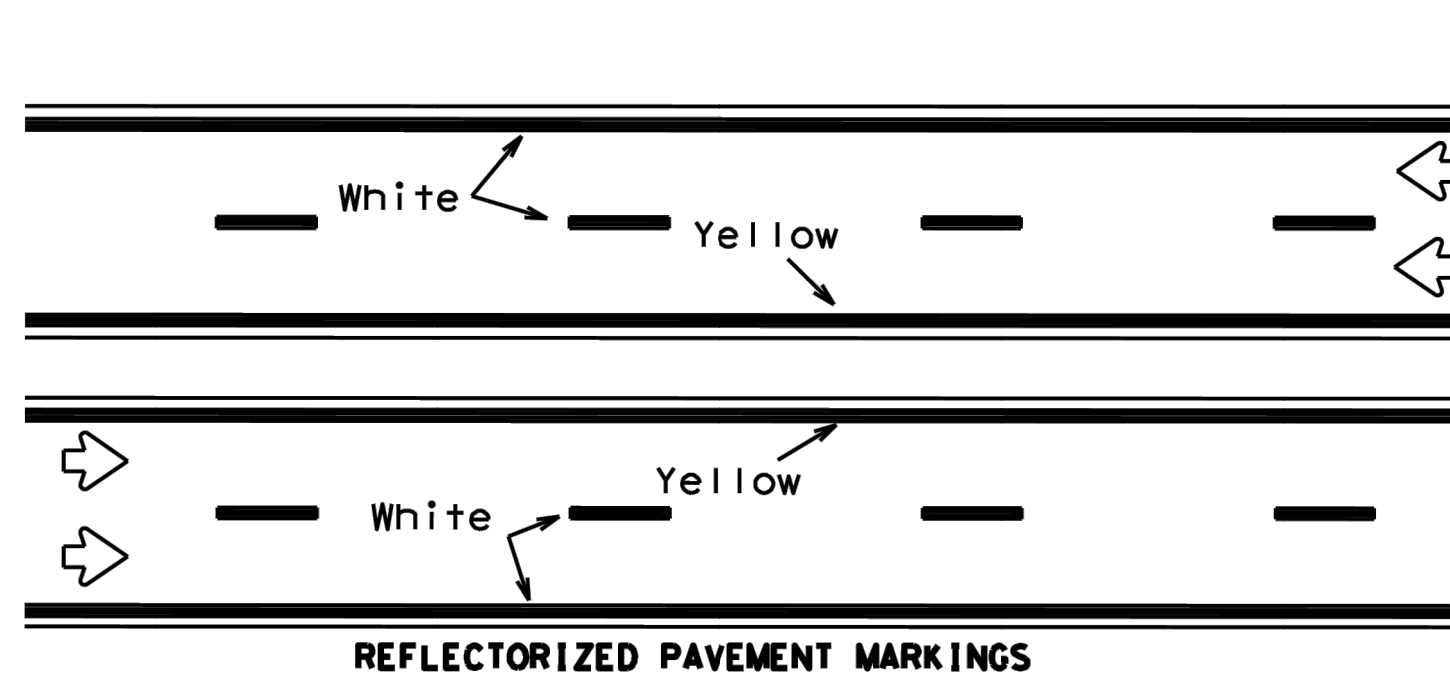
FILE#	bc-21.dgn	DN#	TxDOT	CK#	TxDOT	DW#	TxDOT	CK#	TxDOT
©	TxDOT	FE	February	1998	CONT	SECT	JOB	HIGHWAY	
REVISIONS									
2-98	9-07	5-21							
1-02	7-13								
11-02	8-14								
			DIST	COUNTY		SHEET NO.			

## PAVEMENT MARKING PATTERNS



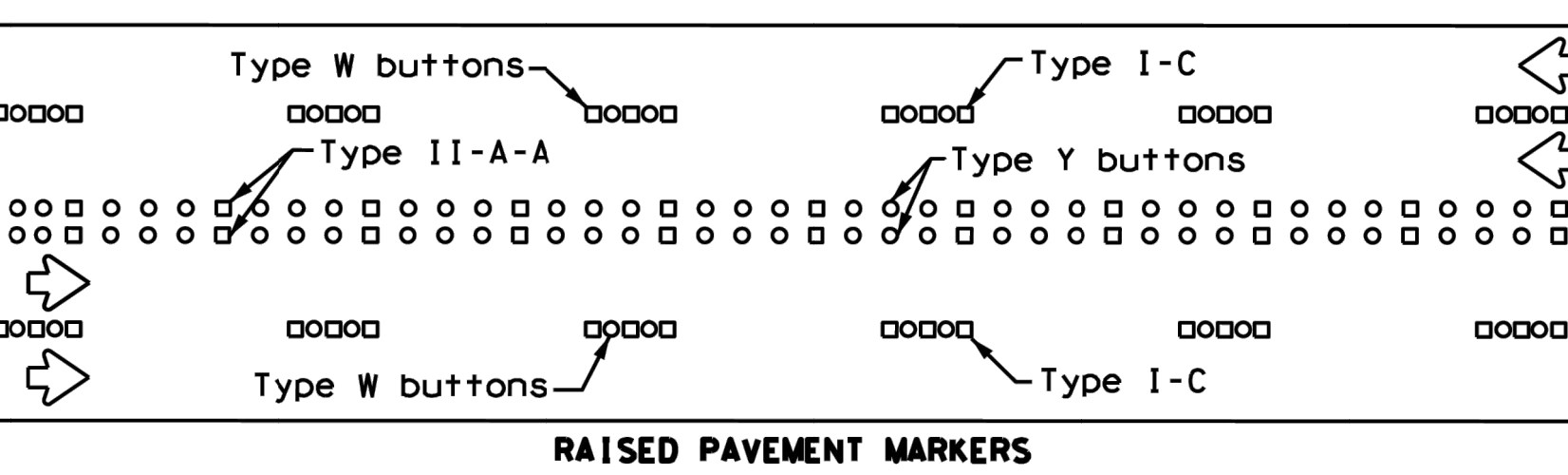
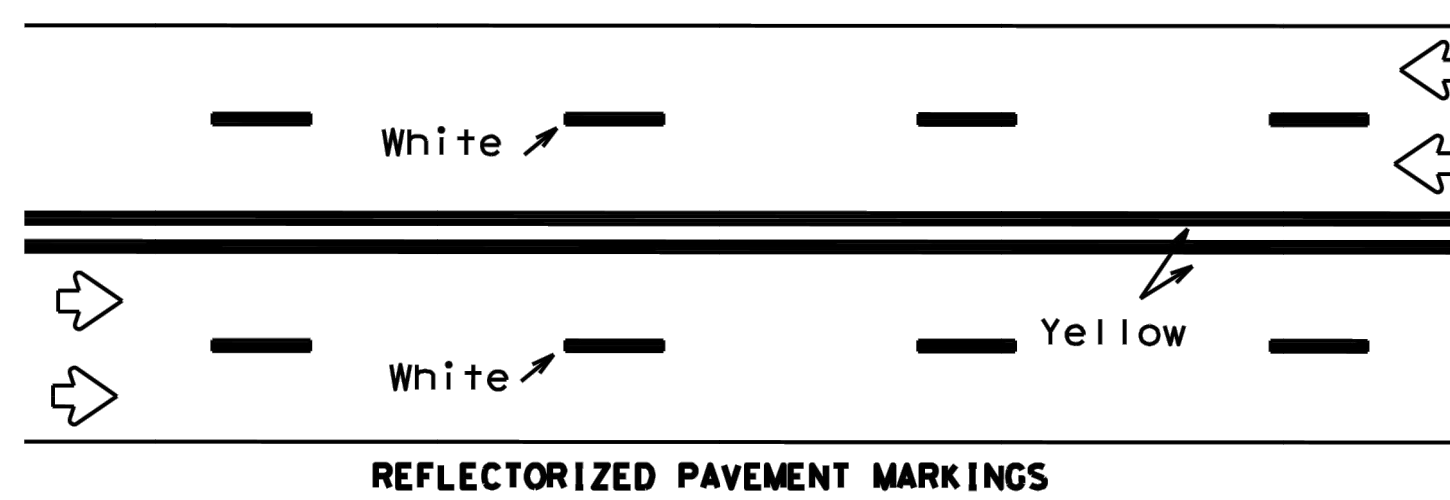
Pattern A is the TXDOT Standard, however Pattern B may be used if approved by the Engineer. Prefabricated markings may be substituted for reflectORIZED pavement markings.

### CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO-LANE, TWO-WAY HIGHWAYS



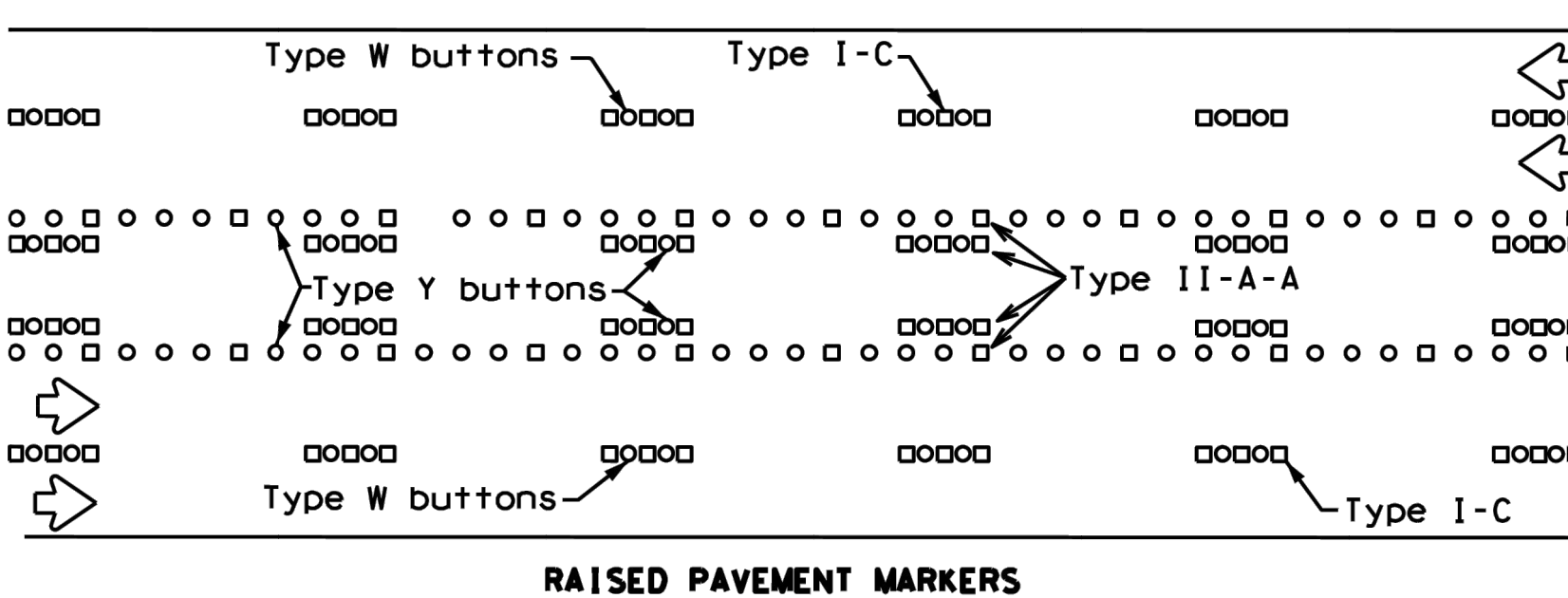
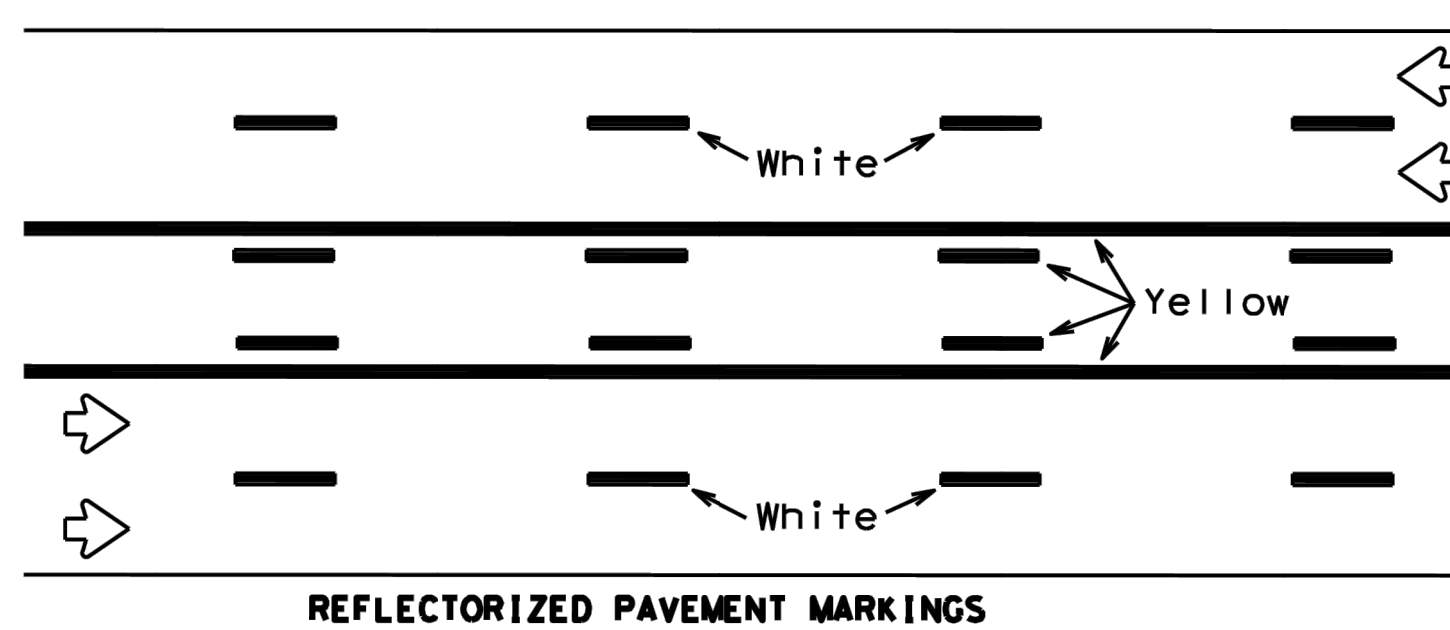
Prefabricated markings may be substituted for reflectORIZED pavement markings.

### EDGE & LANE LINES FOR DIVIDED HIGHWAY



Prefabricated markings may be substituted for reflectORIZED pavement markings.

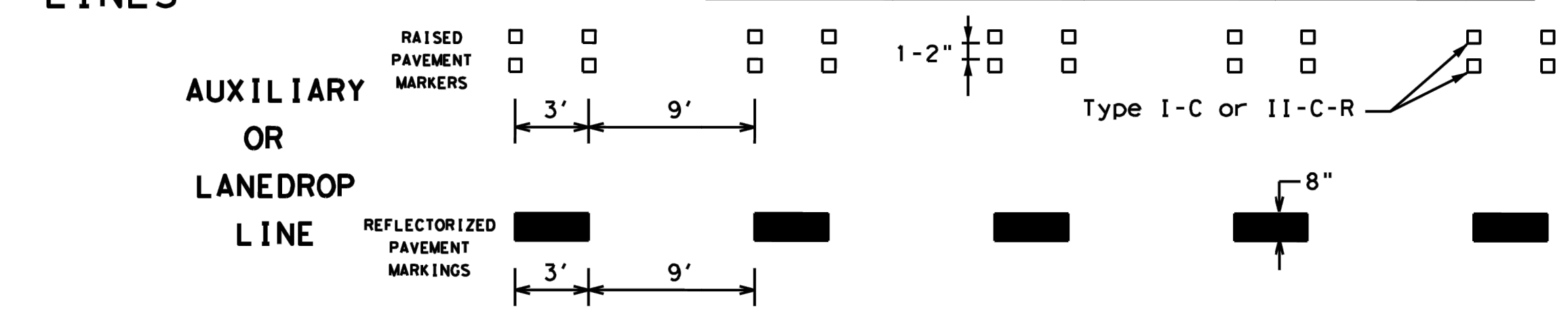
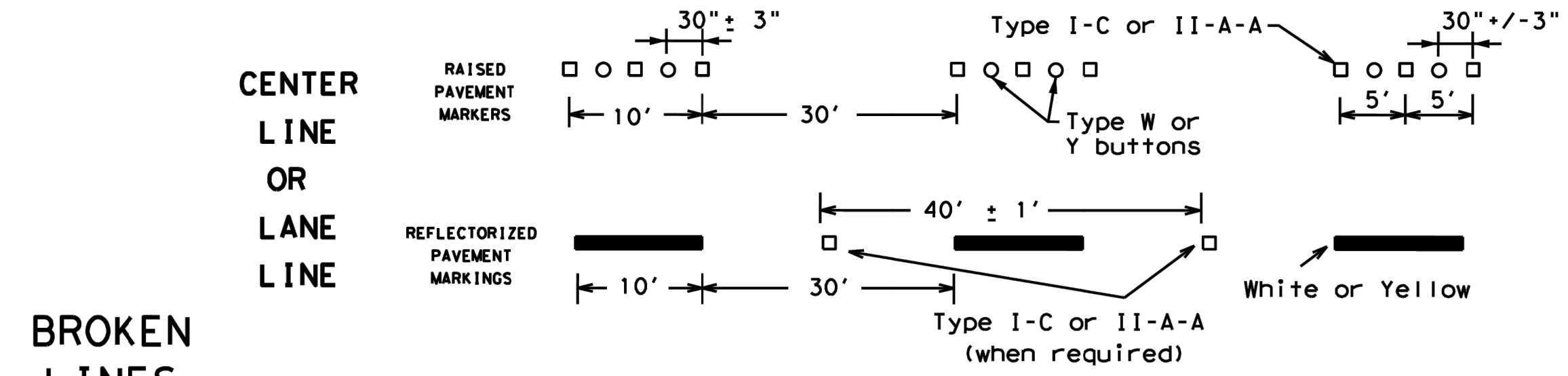
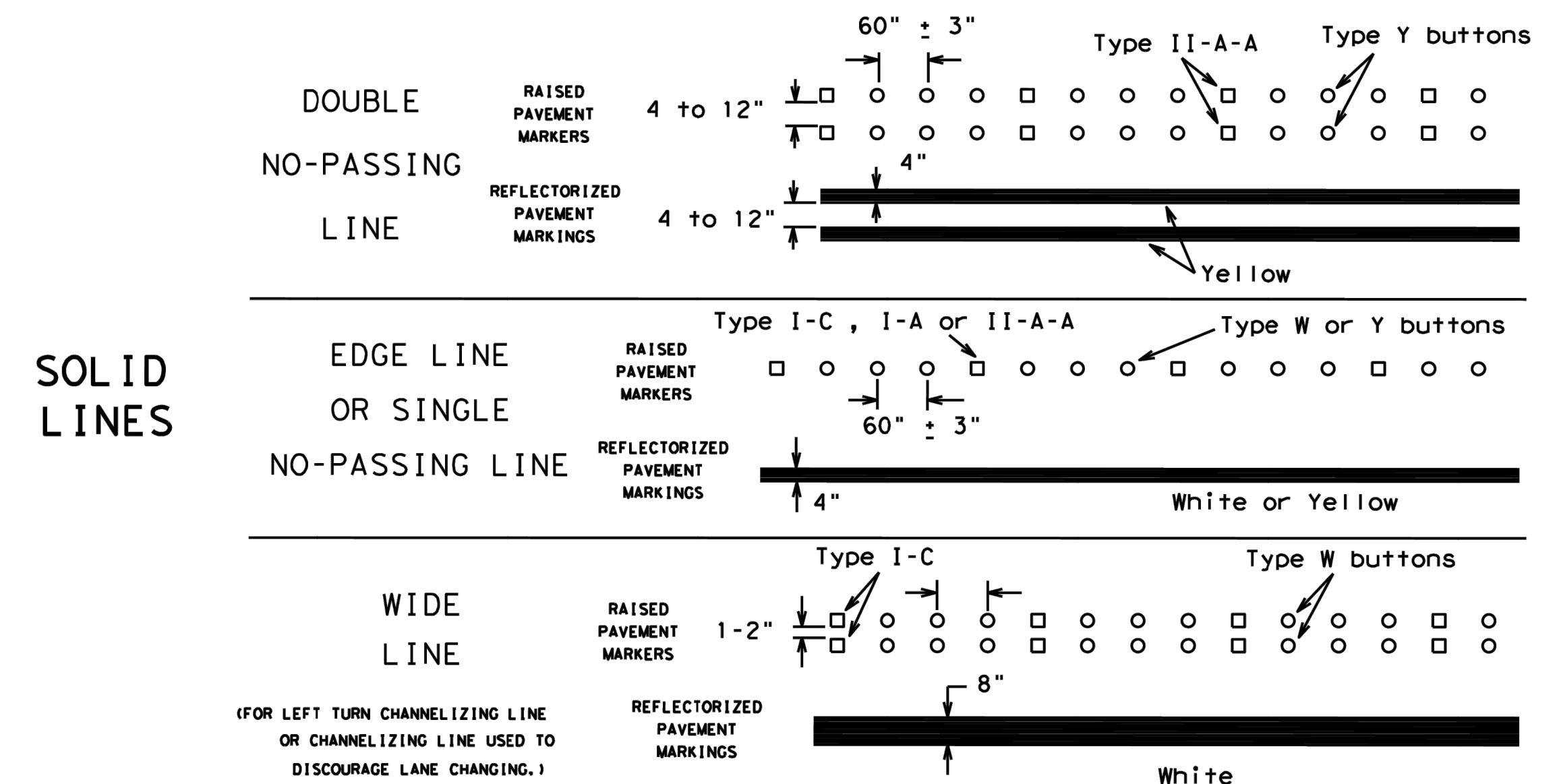
### LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



Prefabricated markings may be substituted for reflectORIZED pavement markings.

### TWO-WAY LEFT TURN LANE

## STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



If raised pavement markers are used to supplement REMOVABLE markings, the markers shall be applied to the top of the tape at the approximate mid length of tape used for broken lines or at 20 foot spacing for solid lines. This allows an easier removal of raised pavement markers and tape.

SHEET 12 OF 12

**Texas Department of Transportation**  
Traffic Safety Division Standard

## BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

### BC (12) - 21

FILE: bc-21.dgn    D#: TxDOT    C#: TxDOT    DW: TxDOT    CK: TxDOT  
 © TxDOT February 1998    CONT    SECT    JOB    HIGHWAY

REVISIONS  
 1-97 9-07 5-21  
 2-98 7-13  
 11-02 8-14

DIST	COUNTY	SHEET NO.
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Raised pavement markers used as standard pavement markings shall be from the approved products list and meet the requirements of Item 672 "RAISED PAVEMENT MARKERS."

DATE		REVISIONS		No.			
STATE OF TEXAS REGISTRATION NO. F-828 11700 KATY FREEMAN SUITE 800 HOUSTON, TX 77079 WWW.KIMLEY-HORN.COM © 2025 KIMLEY-HORN AND ASSOCIATES, INC.							
KHA PROJECT 067785106	DATE AUGUST 2025	SCALE AS SHOWN	DESIGNED BY: NMT	DRAWN BY: NMT	CHECKED BY: AMP	<b>CITY OF GALVESTON</b> <b>UTMB EST</b> <b>REHABILITATION</b>	
<b>TRAFFIC CONTROL</b> <b>DETAILS (14 OF 14)</b>							
SHEET NUMBER <b>C-30</b>							

Plotted By: 2025-08-20 16:03:00, Baltazar, Victoria  
 Last Saved: 2025-01-27 08:27:45 (TRAFFIC CONTROL DETAILS (14 OF 14))  
 Filename: k:\you_utilities\067785106_galveston_utmb_est_rehab_09_cad\03_plan_sheets\c-tcp-details-ii.dwg

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2024-12-12 20:18:28 Prochaska, Drew  
Plotted, By: 2024-12-12 20:17:04 (S.O.)  
Last Saved: k:\hou_civil\0002-no_proj\structural\99_archive\23_utmb_galveston_est (067785106)\02_cad\03_plan  
Filename: sheets\ls-plan.dwg

1.00 GENERAL REQUIREMENTS

- DOCUMENTS AND LIMITATIONS
1.01 THESE STRUCTURAL DOCUMENTS, TOGETHER WITH THE CONCEPTS AND DESIGNS PRESENTED HEREIN, AS AN INSTRUMENT OF SERVICE, ARE INTENDED ONLY FOR THE SPECIFIC PURPOSE AND CLIENT FOR WHICH IT WAS PREPARED...
1.02 IT IS UNDERSTOOD THAT THE CONSULTANT MAKES NO WARRANTY, EITHER EXPRESSED OR IMPLIED, AS TO FINDINGS, DESIGNS, RECOMMENDATIONS, SPECIFICATIONS, OPINION, OR PROFESSIONAL ADVICE...
1.03 ALL NON-STRUCTURAL ELEMENTS INDICATED ON THE STRUCTURAL DRAWINGS HAVE BEEN SHOWN IN GENERAL TO THE RELATIONSHIP TO THE STRUCTURAL ELEMENTS ONLY...
1.04 NOTES ON THIS AND THE FOLLOWING SHEETS ARE PART OF THE PROJECT REQUIREMENTS BUT ARE NOT INTENDED TO REPLACE THE PROJECT SPECIFICATIONS...
1.05 STRUCTURAL DRAWINGS ARE NOT STAND-ALONE DOCUMENTS. THEY ARE AUGMENTED BY TECHNICAL SPECIFICATIONS AND MUST BE COORDINATED WITH ARCHITECTURAL, CIVIL, AND MECHANICAL (ELECTRICAL / PLUMBING / HVAC) DOCUMENTS...
1.06 THE SPECIFICATIONS ARE AN INTEGRAL PART OF THE CONTRACT DOCUMENTS AND SHALL BE USED IN CONJUNCTION WITH THE STRUCTURAL DRAWINGS...
1.07 IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OBTAIN ALL CONTRACT DOCUMENTS AND LATEST ADDENDA AND TO SUBMIT SUCH DOCUMENTS TO ALL SUB-CONTRACTORS AND MATERIAL SUPPLIERS PRIOR TO THE SUBMITTAL OF SHOP DRAWINGS...
1.08 GENERAL CONTRACTOR TO MONITOR THE LOCATION AND CONDITION OF THE EXISTING STRUCTURES PRIOR TO AND DURING EXCAVATION AND DURING CONSTRUCTION OF NEW BUILDINGS...
1.09 WHERE MEMBER LOCATIONS ARE NOT SPECIFICALLY DIMENSIONED, MEMBERS ARE EITHER LOCATED ON COLUMN LINES OR ARE EQUALLY SPACED BETWEEN LOCATED MEMBERS...
1.10 DETAILS LABELED "TYPICAL DETAILS" ON THE DRAWINGS SHALL APPLY TO ALL SITUATIONS OCCURRING ON THE PROJECT THAT ARE THE SAME OR SIMILAR TO THOSE SPECIFICALLY DETAILED...
1.11 DESIGN OF CRANE FOUNDATIONS AND CRANE OPENINGS IN THE STRUCTURE ARE THE RESPONSIBILITY OF THE CONTRACTOR...
1.12 COSTS INCURRED BY ARCHITECT / ENGINEER FOR STRUCTURAL INVESTIGATION AND DESIGN CHANGES SHALL BE PAID BY THE CONTRACTOR.

INSPECTIONS, TESTING, MATERIAL SAMPLING

- 1.13 INSPECTIONS: ANY INSPECTIONS, SPECIAL OR OTHERWISE, THAT ARE REQUIRED BY THE BUILDING CODES, LOCAL BUILDING DEPARTMENTS, OR THESE PLANS, SHALL BE DONE BY AN INDEPENDENT INSPECTION COMPANY...
1.14 MATERIAL SAMPLING AND TESTING: WHEN INDICATED WITH A ' ' THE FOLLOWING SHALL BE SAMPLED AND TESTED BY A CERTIFIED INSPECTOR FROM AN ESTABLISHED AND INDEPENDENT TESTING AGENCY HIRED BY THE OWNER...
1.15 PERIODIC SITE OBSERVATIONS BY THE SER IS SOLELY FOR THE PURPOSE OF DETERMINING IF THE WORK OF THE CONTRACTOR IS PROCEEDING IN ACCORDANCE WITH THE STRUCTURAL CONTRACT DOCUMENTS...
1.16 THE CONTRACTOR SHALL CORRECT AND/OR REPLACE ALL NON-CONFORMING WORK IN MANNER AND MATERIALS APPROVED BY THE STRUCTURAL ENGINEER...
1.17 BEFORE STARTING WORK, CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON THE SITE, AND REPORT ANY DISCREPANCIES IMMEDIATELY TO THE ENGINEER OR RECORD...
1.18 THE CONTRACTOR, BEFORE STARTING ANY WORK, SHALL CHECK ALL DIMENSIONS GIVEN ON THE STRUCTURAL DRAWINGS, RELATING TO GRID LINES, COLUMN, AND WALL LOCATIONS, STRUCTURAL, AND FINISHED FLOOR ELEVATIONS, MEMBER SIZES, ETC...
1.19 REFERENCE CIVIL DRAWINGS FOR SIZE, LOCATION, AND QUANTITY OF ALL CURBS, AND EDGE OF SLAB DIMENSIONS...
1.20 THE CONTRACTOR SHALL REFER TO THE ENGINEER OF RECORD FOR INSTRUCTIONS FOR ANY DIMENSION NOT GIVEN ON OR OBTAINABLE FROM THE CONSTRUCTION DRAWINGS...
1.21 IT IS UNDERSTOOD THAT THE CONTRACTOR IS SOLELY RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK ON THE PROJECT...
1.22 THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LAWS, ORDINANCES, RULES, REGULATIONS, AND ORDERS OF ANY PUBLIC BODY HAVING JURISDICTION FOR THE SAFETY OF PERSONS OR PROPERTY...
1.23 THE CONTRACTOR'S DUTIES AND RESPONSIBILITIES FOR THE SAFETY AND PROTECTION OF THE WORK SHALL CONTINUE UNTIL SUCH TIME AS THE WORK IS SATISFACTORILY COMPLETED...
1.24 IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ALL TEMPORARY BRACING REQUIRED TO MAINTAIN THE STABILITY AND SAFETY OF ALL ELEMENTS DURING THE CONSTRUCTION PROCESS...
1.25 ALL STRUCTURAL ELEMENTS OF THE PROJECT HAVE BEEN DESIGNED BY THE STRUCTURAL ENGINEER TO RESIST THE REQUIRED CODE VERTICAL AND LATERAL FORCES THAT COULD OCCUR IN THE FINAL COMPLETED STRUCTURE ONLY...

MATERIAL SAMPLING AND TESTING SCHEDULE table with columns: ITEM, REQUIRED, REMARKS. Rows include: CONCRETE - REINFORCING, CONCRETE - CYLINDERS, CONCRETE - DESIGN MIX, CONCRETE - SAMPLING FRESH CONCRETE AND PERFORMING SLUMP, AIR CONTENT, AND DETERMINING THE TEMPERATURE OF FRESH CONCRETE AT THE TIME OF MAKING SPECIMENS FOR STRENGTH TESTS, CONCRETE - MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES, MASONRY - PREPARATION OF ANY REQUIRED GROUP SPECIMENS, MORTAR SPECIMENS, AND/OR PRISMS.

DIMENSIONS

- 1.17 BEFORE STARTING WORK, CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON THE SITE, AND REPORT ANY DISCREPANCIES IMMEDIATELY TO THE ENGINEER OR RECORD...
1.18 THE CONTRACTOR, BEFORE STARTING ANY WORK, SHALL CHECK ALL DIMENSIONS GIVEN ON THE STRUCTURAL DRAWINGS, RELATING TO GRID LINES, COLUMN, AND WALL LOCATIONS, STRUCTURAL, AND FINISHED FLOOR ELEVATIONS, MEMBER SIZES, ETC...
1.19 REFERENCE CIVIL DRAWINGS FOR SIZE, LOCATION, AND QUANTITY OF ALL CURBS, AND EDGE OF SLAB DIMENSIONS...
1.20 THE CONTRACTOR SHALL REFER TO THE ENGINEER OF RECORD FOR INSTRUCTIONS FOR ANY DIMENSION NOT GIVEN ON OR OBTAINABLE FROM THE CONSTRUCTION DRAWINGS...

CONSTRUCTION SAFETY

- 1.21 IT IS UNDERSTOOD THAT THE CONTRACTOR IS SOLELY RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK ON THE PROJECT...
1.22 THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LAWS, ORDINANCES, RULES, REGULATIONS, AND ORDERS OF ANY PUBLIC BODY HAVING JURISDICTION FOR THE SAFETY OF PERSONS OR PROPERTY...
1.23 THE CONTRACTOR'S DUTIES AND RESPONSIBILITIES FOR THE SAFETY AND PROTECTION OF THE WORK SHALL CONTINUE UNTIL SUCH TIME AS THE WORK IS SATISFACTORILY COMPLETED...
1.24 IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ALL TEMPORARY BRACING REQUIRED TO MAINTAIN THE STABILITY AND SAFETY OF ALL ELEMENTS DURING THE CONSTRUCTION PROCESS...
1.25 ALL STRUCTURAL ELEMENTS OF THE PROJECT HAVE BEEN DESIGNED BY THE STRUCTURAL ENGINEER TO RESIST THE REQUIRED CODE VERTICAL AND LATERAL FORCES THAT COULD OCCUR IN THE FINAL COMPLETED STRUCTURE ONLY...

2.00 DESIGN CRITERIA

- 2.01 THE CONSTRUCTION DOCUMENTS ARE BASED UPON THE REQUIREMENTS, AND REFERENCED CODES AND STANDARDS, OF THE 2021 INTERNATIONAL BUILDING CODE...
2.02 BUILDING RISK CATEGORY = II
2.03 STRUCTURE LOADING:
LOADING CRITERIA
A. DEAD: DESIGN DEAD LOADS INCLUDE STRUCTURE SELF WEIGHT PLUS THE FOLLOWING SUPERIMPOSED UNIFORM LOADS:
CATEGORY HANGING MEP INSULATION & ROOF ASSEMBLY UNIFORM LOAD 5 PSF 5 PSF
LIVE: DESIGN LIVE LOADS ARE BASED ON THE MORE RESTRICTIVE OF THE UNIFORM LOAD LISTED BELOW OR THE CONCENTRATED LOAD LISTED ACTING OVER AN AREA OF 4.5 SQ FEET...
CATEGORY ROOF UNIFORM LOAD 20 PSF
B. WIND ULTIMATE DESIGN WIND SPEED, Vult = 150 MPH (3-SECOND GUST) EXPOSURE CATEGORY = C INTERNAL PRESSURE COEFFICIENT = +/- 0.18
C. SEISMIC IMPORTANCE FACTOR, Ie = 1.00 SITE CLASS = D Ss = 0.065 S1 = 0.038 Sds = 0.069 Sd1 = 0.061 SEISMIC DESIGN CATEGORY = A BASIC SEISMIC FORCE RESISTING SYSTEM(S) = ORDINARY REINFORCED CMU MOMENT FRAME RESPONSE MODIFICATION COEFFICIENT(S), R = NA (CATEGORY A) SEISMIC RESPONSE COEFFICIENT(S), Cs = 1.17 KIPS DESIGN BASE SHEAR ANALYSIS PROCEDURE = EQUIVALENT LATERAL FORCE PROCEDURE

2.00 DESIGN CRITERIA (CONT'D)

- 2.04 THE CONTRACTOR SHALL ENSURE THAT CONSTRUCTION MATERIALS WHOSE WEIGHT EXCEEDS THE DESIGN LIVE LOADS INDICATED ON THE STRUCTURAL DRAWINGS ARE NOT STORED ON STRUCTURALLY SUPPORTED FLOOR OR ROOF FRAMING...
2.05 FOR FIRE RATING AND FIREPROOFING ASSEMBLY EVALUATIONS, CONSIDER THE FOLLOWING ASSEMBLIES RESTRAINED: COMPOSITE WIDE-FLANGE STEEL FRAMING, INTERIOR BAYS OF CONTINUOUS CAST-IN-PLACE CONCRETE CONSTRUCTION...
SERVICEABILITY CRITERIA
2.06 BUILDING MOVEMENT AND DEFLECTIONS: THE BUILDING MOVEMENT SPECIFIED HEREIN IS ANTICIPATED TO OCCUR AND SHOULD BE CONSIDERED BY THE CONTRACTOR IN THE PERFORMANCE OF THE WORK...
A. ROOF DEFLECTIONS: THE FOLLOWING PROVISION FOR SUPERIMPOSED LOAD DEFLECTIONS SHALL BE MADE IN THE DESIGN, FABRICATION, AND INSTALLATION OF ALL PARTITIONS, GLASS WALLS, AND OTHER ELEMENTS SUPPORTED BY AND ATTACHED TO THE STRUCTURE...
2.07 STRUCTURAL COMPONENTS ARE NOT DESIGNED FOR VIBRATING EQUIPMENT. MOUNT VIBRATING EQUIPMENT ON VIBRATION ISOLATORS.

3.00 FOUNDATIONS

- 3.01 FOUNDATION DESIGN IS BASED ON AN ASSUMED BEARING PRESSURE OF 1,500 PSF (TOTAL LOADS) AND 1,000 PSF (DEAD + SUSTAINED LIVE LOADS) AFTER SITE PREPARATION...
3.02 PREPARE SOIL WITH PROOF ROLL OF SUBGRADE AND COMPACTED STRUCTURAL FILL PER SPECIFICATION...
3.03 FOUNDATION CONSTRUCTION AND CONCRETING SHALL BE IN ACCORDANCE WITH THE CURRENT VERSION OF ACI 336: FILL FOUNDATION EXCAVATIONS WITH CONCRETE AS SOON AS PRACTICAL...
3.04 TEMPLATES SHALL BE UTILIZED TO SET DOWELS AND ANCHOR RODS IN FOUNDATIONS...
3.05 THE CONTRACTOR SHALL DETERMINE THE EXTENT OF CONSTRUCTION DEWATERING REQUIRED FOR THE EXCAVATION...
3.06 EXCAVATION: THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL EXCAVATION PROCEDURES INCLUDING LAGGING, SHORING, AND PROTECTION OF ADJACENT PROPERTY, STRUCTURES, STREETS, AND UTILITIES IN ACCORDANCE WITH THE LOCAL BUILDING DEPARTMENT.

4.00 REINFORCED STRUCTURAL CONCRETE

- CONCRETE
4.01 THE GENERAL CONTRACTOR SHALL ASSIST AND COOPERATE WITH AN INDEPENDENT TESTING LABORATORY (TO BE RETAINED BY THE OWNER) WHICH SHALL CONDUCT ALL THE SPECIFIED TESTS REQUIRED FOR THE CONCRETE WORK...
4.02 CONCRETE MIX DESIGNS FOR ALL CONCRETE WORK IS REQUIRED TO BE SUBMITTED TO THE ENGINEER FOR REVIEW...
4.03 CONSTRUCTION JOINTS SHALL BE AS APPROVED BY THE STRUCTURAL ENGINEER AND THE ARCHITECT...
4.04 A COPIES OF ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS" AND ACI SP 15 "FIELD REFERENCE MANUAL" SHALL BE KEPT IN THE PROJECT FIELD OFFICE AT ALL TIMES...
4.05 CONTRACTOR SHALL PREPARE AND SUBMIT QUALITY CONTROL MEASURES TO ENSURE TEMPERATURE WITHIN MASS CONCRETE POURS COMPLIES WITH THE REQUIREMENTS IN THE PROJECT SPECIFICATIONS...
4.06 CONCRETE COMPRESSIVE DESIGN STRENGTH:

CLASSES OF CONCRETE MATRIX table with columns: CONCRETE USAGE, MINIMUM COMPRESSIVE STRENGTH (fc), CONCRETE TYPE, EXPOSURE CLASSES, MAXIMUM W/CM RATIO, TARGET AIR CONTENT (%), MAXIMUM AGGREGATE SIZE, MAXIMUM CEMENT REPLACEMENT. Rows include: INTERIOR SLAB-ON-GRADE.

- A. CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF THE CLASSES OF CONCRETE TABLE UNLESS NOTED OTHERWISE...
B. ALL CONCRETE SHALL BE CONSIDERED TO BE EXPOSURE CLASS F1, F2, F3, S1, S2, S3, P1, C1, OR C2...
C. CONCRETE NOTED ABOVE OR ON PLAN TO BE IN EXPOSURE CLASSES F1, F2, F3, S1, S2, S3, P1, C1, OR C2 SHALL BE PROPORTIONED TO COMPLY WITH ACI 318...
D. FLY ASH MAY BE USED IN THE PIERS AND GRADE BEAMS AS A POZZOLAN TO REPLACE A PORTION OF THE PORTLAND CEMENT...
E. HWY INDICATES NORMALWEIGHT CONCRETE WITH CURED DENSITY OF 145 +/- 5 PCF...
4.07 PROVIDE 3/4 INCH CHAMFERS AT ALL EXPOSED EDGES UNO...
4.08 CORE DRILLING SHALL NOT BE ALLOWED THROUGH IN-PLACE CONCRETE ELEMENTS UNLESS SPECIFICALLY APPROVED BY THE ENGINEER...
4.09 PROVIDE CHAMFERS AS SPECIFIED AND/OR DETAILED ON THE ARCHITECTURAL DRAWINGS...
4.10 THERE SHALL BE NO HORIZONTAL CONSTRUCTION JOINTS IN ANY CONCRETE POURS UNLESS SHOWN ON THE DRAWINGS...
4.11 CONSTRUCTION JOINTS BETWEEN FOOTINGS AND WALLS OR COLUMNS, OR WALLS, COLUMNS, BEAMS, AND THE FLOOR SYSTEM THEY SUPPORT SHALL BE PREPARED BY ROUGHENING THE CONTACT SURFACE TO A FULL AMPLITUDE OF APPROXIMATELY 1/4 INCH LEAVING THE CONTACT SURFACE CLEAN AND FREE OF LAITANCE...
4.12 CONCRETE SLUMP TESTS SHALL BE MADE BEFORE AND AFTER THE ADDITION OF ADMIXTURES AND MAY BE TAKEN AT THE BACK OF THE TRUCK...
4.13 CONCRETE PLACEMENT: SHALL BE PER RECOMMENDATIONS IN ACI 614, ACI 301, AND ACI 316.

REINFORCEMENT

- 4.14 REINFORCING STEEL MATERIALS SHALL CONFORM TO THE FOLLOWING MINIMUM REQUIREMENTS UNLESS NOTED OTHERWISE ON THE CONTRACT DOCUMENTS...
DEFORMED BARS: ASTM A615 - GRADE 60 (#10 AND SMALLER BARS), GRADE 80 (#11 AND LARGER BARS)
4.15 DETAILING OF REBAR SHALL BE IN ACCORDANCE WITH THE LATEST REVISION OF THE ACI DETAILING MANUAL...
4.16 TOLERANCES FOR REINFORCEMENT FABRICATION, REINFORCEMENT PLACEMENT, AND CONCRETE CONSTRUCTION SHALL CONFORM TO THE LATEST EDITION OF ACI 117...
4.17 REINFORCING BARS SHALL NOT BE TACK WELDED, WELDED, HEATED, OR CUT UNLESS INDICATED ON THE CONTRACT DOCUMENTS...
4.18 CLEAR DISTANCE FROM FACE OF CONCRETE TO MAIN STEEL SHALL BE AS SHOWN ON THE STRUCTURAL DRAWINGS...
4.19 ALL REINFORCEMENT SHOWN IS INTENDED TO BE CONTINUOUS UNLESS NOTED OTHERWISE...
4.20 WHERE A 90 DEGREE OR 180 DEGREE HOOK IS GRAPHICALLY INDICATED, PROVIDE CORRESPONDING ACI STANDARD HOOKS UNO...
4.21 PROVIDE MECHANICAL SPLICES FOR BARS LARGER THAN #11 OR WHERE INDICATED...
4.22 LAP WELDED WIRE REINFORCEMENT TWO PANEL SPACINGS, UNO...
4.23 PROVIDE EPOXY COATED OR GALVANIZED REINFORCEMENT STEEL AT EXTERIOR EXPOSED CONCRETE UNPROTECTED BY WATERPROOFING AND WHERE NOTED ON THE DRAWINGS...
4.24 THE REINFORCING STEEL DETAILER SHALL ADJUST REINFORCING STEEL CAGE SIZES AT INTERSECTING STRUCTURAL MEMBERS AS REQUIRED TO ALLOW CLEARANCE FOR INTERSECTING REINFORCING BAR LAYERS WITH MINIMUM SPECIFIED COVER...
4.25 COLUMN REINFORCEMENT BARS SHALL BE BUTT SPLICED WHERE #14 OR #18 BARS COMPRESSION SPLICES ARE SCHEDULED...
4.26 PROVIDE MECHANICAL SPLICES FOR BARS LARGER THAN #11 OR WHERE INDICATED...
4.27 PROVIDE MECHANICAL SPLICES FOR BARS LARGER THAN #11 OR WHERE INDICATED...
4.28 PROVIDE MECHANICAL SPLICES FOR BARS LARGER THAN #11 OR WHERE INDICATED...
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4.59 PROVIDE MECHANICAL SPLICES FOR BARS LARGER THAN #11 OR WHERE INDICATED...
4.60 PROVIDE MECHANICAL SPLICES FOR BARS LARGER THAN #11 OR WHERE INDICATED...
4.61 PROVIDE MECHANICAL SPLICES FOR BARS LARGER THAN #11 OR WHERE INDICATED...
4.62 PROVIDE MECHANICAL SPLICES FOR BARS LARGER THAN #11 OR WHERE INDICATED...

4.00 REINFORCED STRUCTURAL CONCRETE (CONT'D)

- SLAB-ON-GRADE
4.28 CONTRACTOR SHALL SUBMIT A SOG CONTROL JOINT PLAN FOR REVIEW PRIOR TO PLACING CONCRETE...
4.27 PROVIDE ISOLATION JOINTS AT ALL COLUMNS / POSTS AND MEP PIPES THAT PENETRATE CONCRETE SLAB-ON-GRADE...
4.28 COORDINATE LOCATIONS OF ALL FLOOR DRAINS AND ASSOCIATED PLUMBING WITH MEP PLANS...
4.29 PROVIDE THICKENED SLAB EDGE AT ALL EDGE OF SLAB CONDITIONS FOR TYPICAL SOG...
4.30 PROVIDE THICKENED SOG STRIP BENEATH ALL STAIR RISERS, CMU WALLS, AND CONCRETE WALLS BEARING ON SLAB...
4.31 SUBGRADE UNDER SLABS ON FILL SHALL BE PREPARED, PLACED, AND COMPACTED AND SHALL BE FREE OF STANDING WATER, MUD OR FROZEN SOIL...
4.32 A VAPOR RETARDER WITH A PERFORMANCE EQUIVALENT TO A 15 MIL STEGOWRAP SHALL BE PLACED BENEATH THE SLAB-ON-GRADE AT LOCATIONS WITH FLOOR FINISHES AND A DESIGNATED BY THE ARCHITECTURAL REQUIREMENTS...
4.33 STRUCTURAL SLABS-AT-GRADE HAVE BEEN DESIGNED AS EARTH-FORMED STRUCTURAL SLAB AND SHALL HAVE CONSTRUCTION JOINTS IF REQUIRED BY CONSTRUCTION SEQUENCES...
OPENINGS IN SLABS, BEAMS, AND WALLS
4.34 IN CAST-IN-PLACE CONCRETE WORK, NO OPENINGS SHALL BE PERMITTED IN SLABS WITHIN A DISTANCE OF EIGHT INCHES FROM THE FACE OF A COLUMN OR EDGE OF SLAB...
4.35 IN PRECAST CONCRETE WORK, OPENINGS LESS THAN 10 INCHES ROUND OR SQUARE SHALL BE LOCATED AND FIELD DRILLED OR SAW CUT BY THE TRADE...
4.36 OPENINGS IN CONCRETE WALLS MAY BE PERMITTED SUBJECT TO THE APPROVAL OF THE ENGINEER OF RECORD...
4.37 OPENINGS THROUGH WEBS OF BEAMS ARE PROHIBITED EXCEPT AS SPECIFICALLY SHOWN ON THE PLANS...
4.38 NO DRILLING THROUGH SLABS, BEAMS, COLUMNS, OR WALLS SHALL BE CARRIED OUT EXCEPT WITH THE SPECIFIC APPROVAL OF THE ENGINEER OF RECORD...

6.00 MASONRY

- 6.01 THE CONTRACTOR SHALL REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL DETAILS RELATING TO MASONRY WORK...
6.02 CONCRETE MASONRY UNITS (CMU) SHALL BE ERECTED AS LOAD BEARING CONCRETE MASONRY...
6.03 LOAD BEARING, NON-LOAD BEARING, AND BACKUP WALL CONCRETE MASONRY CONSTRUCTION SHALL CONFORM TO THE FOLLOWING MATERIAL STANDARDS:
CONCRETE BLOCK: ASTM C90, NORMAL WEIGHT (135 PCF) (MINIMUM 28-DAY COMPRESSIVE STRENGTH 2,000 PSI)
MORTAR: ASTM C270, TYPE S M OR PORTLAND CEMENT LIME ONLY BY PROPORTION
REINFORCEMENT: ASTM A615, GRADE 60
JOINT REINFORCEMENT: ASTM A615 LADDER TYPE
EXTERIOR JT REINF: GALVANIZE PER ASTM A153
INTERIOR JT REINF: GALVANIZE PER ASTM A641
TYPICAL: GALVANIZE PER ASTM A641
RELATIVE HUMIDITY >75%: GALVANIZE PER ASTM A153
ADHESIVE ANCHORS: HLTH HIT-HY 270
6.04 PROVIDE VERTICAL REINFORCING AS NOTED PER THE CMU WALL REINFORCING SCHEDULE AND PER THE REQUIREMENTS BELOW...
6.05 SEE ARCHITECT'S DRAWINGS FOR THE EXTENTS OF MASONRY WALLS...
6.06 THE GENERAL CONTRACTOR SHALL PROVIDE LINTELS AS SCHEDULED FOR ALL OPENINGS EXCEPT WHERE SPECIFICALLY DETAILED OTHERWISE...
6.07 SHELF ANGLES SUPPORTING MASONRY SHALL HAVE 1/4-INCH-WIDE EXPANSION JOINTS SPACED NOT MORE THAN 40 FEET APART...
6.08 UNLESS NOTED OTHERWISE, MAINTAIN A 1" GAP BETWEEN THE TOP OF ALL NON-LOAD BEARING MASONRY WALLS AND THE UNDERSIDE OF THE STRUCTURE ABOVE...
6.09 PROVIDE CONTROL AND EXPANSION JOINTS AS NOTED ON THE ARCHITECTURAL DRAWINGS...
6.10 DURING CONSTRUCTION, COVER TOPS OF WALLS, PROJECTIONS, AND SILLS WITH WATERPROOF SHEETING AT END OF EACH DAY'S WORK...
6.11 DO NOT APPLY UNIFORM FLOOR OR ROOF LOADS FOR AT LEAST 12 HOURS AND CONCENTRATED LOADS FOR AT LEAST 3 DAYS AFTER BUILDING MASONRY WALLS OR COLUMNS...
6.12 COMPLY WITH HOT AND COLD WEATHER CONSTRUCTION REQUIREMENTS CONTAINED IN ACI 530.1.



Know what's below. Call before you dig.

Project information sidebar including: KHA PROJECT 067785106, DATE 12/12/2024, SCALE AS SHOWN, DESIGNED BY: APP, DRAWN BY: APP, CHECKED BY: MS, CITY OF GALVESTON UTMB EST REHABILITATION, SHEET NUMBER S0.0, and Kimley-Horn logo with contact information.

6.00 SHOP DRAWINGS (SUBMITTALS)

SUBMITTALS - SHOP DRAWINGS AND PRODUCT DATA

- 6.01 REVIEW OF SHOP DRAWINGS BY THE ENGINEER OF RECORD IS LIMITED TO COMPLIANCE OF THE COMPLETED STRUCTURE WITH THE DESIGN CONCEPT AND INFORMATION GIVEN IN THE PLANS AND SPECIFICATIONS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DIMENSIONS, QUANTITIES, PERFORMANCE, SAFETY, COORDINATION WITH OTHER WORKS, AND ALL OTHER REQUIREMENTS OF THE PLANS AND SPECIFICATIONS. REVIEW DOES NOT AUTHORIZE CHANGES TO CONTRACT.
- 6.02 THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR REVIEW IN ACCORDANCE WITH A SCHEDULE OF SUBMITTALS ACCEPTABLE TO THE ENGINEER. THESE SHOP DRAWINGS SHALL HAVE BEEN CHECKED BY, AND STAMPED WITH THE APPROVAL OF THE CONTRACTOR, AND IDENTIFIED AS THE ENGINEER MAY REQUIRE. THE DATA SHOWN ON THE SHOP DRAWINGS SHALL BE COMPLETE WITH RESPECT TO DIMENSIONS, DESIGN CRITERIA, AND DULY SIGNED AND SEALED BY A PROFESSIONAL ENGINEER (WHERE APPLICABLE).
- 6.03 SUBMITTAL LIST AND SCHEDULE: THE GENERAL CONTRACTOR SHALL PREPARE A DETAILED LIST OF SUBMITTALS, SCHEDULE OF ALL SUBMITTAL ITEMS, TWO WEEK DETAILED CONSTRUCTION SCHEDULE AND OVERALL CONSTRUCTION SCHEDULE TO THE ARCHITECT AND SER TWENTY DAYS PRIOR TO SUBMITTING SHOP DRAWINGS. THE ARCHITECT AND SER SHALL HAVE THE OPPORTUNITY TO REVIEW THE PROPOSED SCHEDULE AND SUBMIT COMMENTS TO THE CONTRACTOR. THIS LIST SHALL BE UPDATED, REVISED, AND KEPT CURRENT AS THE JOB PROGRESSES. THE SUBMITTAL LIST SHALL BE ORGANIZED AS SHOWN BELOW:
  - A. SHOP DRAWINGS
  - B. MANUFACTURER'S LITERATURE FOR PRODUCTS, ASSEMBLIES, AND HARDWARE
  - C. PRODUCTS, ASSEMBLIES, AND HARDWARE
  - D. PRODUCT CERTIFICATIONS, MILL CERTIFICATES, AND AFFIDAVITS
  - E. DESIGN CALCULATIONS
- 6.04 REVIEW AND RETURN OF SHOP DRAWINGS SHALL BE BASED ON A MINIMUM OF TEN (10) WORKING DAYS IN THE STRUCTURAL ENGINEER'S OFFICE FROM RECEIPT OF SUBMISSION TO RETURN TO THE NEXT PARTY FOR THEIR ACTION. SHOP DRAWINGS SHOULD BE SUBMITTED INCREMENTALLY AS APPROPRIATE PACKAGES ARE PREPARED TO EQUALIZE THE WORKLOAD FOR REVIEW OF THE DRAWINGS. SUBMISSION OF A LARGE VOLUME OF SHOP DRAWINGS AT ONE TIME MAY RESULT IN REVIEW TIMES WHICH WILL EXCEED THOSE NOTED ABOVE. DEFINITION OF A "LARGE VOLUME" OF SHOP DRAWINGS IS SUBJECT TO INTERPRETATION.
- 6.05 ALL SHOP DRAWINGS MUST BE REVIEWED AND STAMPED BY THE GENERAL CONTRACTOR PRIOR TO SUBMITTAL.
- 6.06 CONTRACTOR SHALL SUBMIT ELECTRONIC PDF FILES FOR ALL DRAWINGS SPECIFIED TO BE RETURNED BY THE ENGINEER.
- 6.07 REPRODUCTIONS: THE USE OF ELECTRONIC FILES OR REPRODUCTIONS OF THESE CONTRACT DOCUMENTS BY ANY CONTRACTOR, SUBCONTRACTOR, ERECTOR, FABRICATOR, OR MATERIAL SUPPLIER IN LIEU OF PREPARATION OF SHOP DRAWINGS SIGNIFIES THEIR ACCEPTANCE OF ALL INFORMATION SHOWN HEREON AS CORRECT, AND OBLIGATES THEMSELVES TO ANY JOB EXPENSE, REAL OR IMPLIED, ARISING DUE TO ERRORS THAT MAY OCCUR HEREON.
- 6.08 THE OMISSION FROM THE SHOP DRAWINGS OF ANY MATERIALS REQUIRED BY THE CONTRACT DOCUMENTS TO BE FURNISHED SHALL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF FURNISHING AND INSTALLING SUCH MATERIALS, REGARDLESS OF WHETHER THE SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED.
- 6.09 SHOP DRAWINGS REJECTED DUE TO NON-COMPLIANCE WITH THE STRUCTURAL DOCUMENTS SHALL BE RESUBMITTED WITH THE SAME TIME REQUIREMENTS FOR REVIEW AS NOTED ABOVE.
- 6.10 NO CLAIMS MAY BE MADE ON THE PART OF THE CONTRACTOR FOR DELAY OF THE PROJECT DUE TO SHOP DRAWING REVIEWS WHICH OCCUR WITHIN THE ABOVE STATED TIME LIMITS OR FOR REVIEWS WHICH TAKE GREATER TIME THAN NOTES ABOVE DUE TO SUBMISSION OF A LARGE VOLUME OF SHOP DRAWINGS AT ONE TIME.
- 6.11 THE GENERAL CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND CALCULATIONS (AS REQUIRED) FOR THE FOLLOWING ITEMS AS OUTLINED IN THE DRAWINGS AND SPECIFICATIONS:
  - A. CONCRETE MIX DESIGNS (b, c)
  - B. CONCRETE FORMWORK (b)
  - C. CONSTRUCTION JOINT LOCATIONS IN STRUCTURAL CONCRETE (b)
  - D. FORMWORK, SHORING, AND BRACING (a, b, c, d)
  - E. CONCRETE REINFORCING DETAILING AND LAYOUT (c)
  - F. HOLLOW-CORE PANELS

NOTES, ITEMS MARKED THUS SHALL:

- a. INCLUDE SHOP DRAWINGS SEALED BY A REGISTERED ENGINEER IN THE STATE WHERE THE PROJECT IS LOCATED
- b. BE SUBMITTED TO ENGINEER FOR OWNER'S RECORD ONLY AND WILL NOT HAVE THE ENGINEER'S SHOP DRAWING STAMP AFFIXED
- c. BE SUBMITTED TO THE OWNER'S TESTING AGENCY FOR THEIR REVIEW
- d. INCLUDE SUPPORTING CALCULATIONS SEALED AND SIGNED BY A REGISTERED ENGINEER IN THE STATE WHERE THE PROJECT IS LOCATED PER THE PROJECT SPECIFICATIONS
- e. REFER TO ITEMS THAT IMPOSE LOADS ON THE STRUCTURE AND SELECTED BY THE CONTRACTOR

DEFERRED SUBMITTALS

- 6.12 DEFERRED SUBMITTALS AS REQUIRED BY THE BUILDING CODE/OFFICIAL SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:
  - A. EXCAVATION SYSTEM
    - A. THE SHOP DRAWING IS REQUESTED.
    - B. THE SHOP DRAWING IS BASED ON THE LATEST DESIGN.
    - C. THE DESIGN PROFESSIONALS' COMMENTS FROM ANY PREVIOUS SUBMITTALS ARE ADDRESSED.
    - D. THE WORK IS COORDINATED AMONG ALL CONSTRUCTION TRADES
    - E. REVISIONS FROM PREVIOUS SUBMITTALS ARE CLEARLY MARKED BY CIRCILING OR CLOUDS.
    - F. SUBMITTAL IS COMPLETE.
    - G. SUBMITTAL DOES NOT INCLUDE SUBSTITUTION REQUEST.
    - H. SUBMITTAL SHALL INCLUDE A STAMP INDICATING PROJECT NAME AND LOCATION, SUBMITTAL NUMBER, SPECIFICATION SECTION NUMBER.
- 6.14 THE SER SHALL RETURN, WITHOUT COMMENT, SUBMITTALS WHICH THE CONTRACTOR HAS NOT STAMPED OR WHICH DO NOT MEET THE ABOVE REQUIREMENTS. THE SER'S REVIEW OF SUBMITTALS SHALL BE FOR GENERAL CONFORMANCE WITH THE DESIGN INTENT.
- 6.15 THE CONTRACTOR SHALL EMPLOY OR RETAIN A PROFESSIONAL ENGINEER LICENSED IN THE STATE WHERE THE PROJECT IS LOCATED TO DESIGN AND DETAIL PERFORMANCE ITEMS AS PART OF THE BASE BUILDING STRUCTURE.
- 6.16 FOR COMPONENTS THAT REQUIRE ENGINEERING BY THE CONTRACTOR, PROVIDE A NOTE ON EACH SHOP DRAWINGS, WRITTEN AND SIGNED BY THE SUPPLIER'S ENGINEER, INDICATING THAT THE SHOP DRAWING IS IN CONFORMANCE WITH THE CALCULATIONS OF THE CONTRACTOR'S ENGINEER.
- 6.17 SUBMITTALS SHALL LIST THE DESIGN LOADS USED AND BE SEALED AND SIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE WHERE THE PROJECT IS LOCATED. SUBMITTAL SHALL INCLUDE LOCATION, MAGNITUDE AND DIRECTION OF UNFACTORED IMPOSED LOADS, GRAPHICALLY REPRESENTED IN THEIR APPROPRIATE LOCATIONS ON A COPY OF THE CONTRACT DOCUMENT STRUCTURAL FRAMING PLANS OR ELEVATIONS AS APPROPRIATE. DETAIL REFERENCES IN THE CONNECTIONS APPLICABLE AT EACH LOCATION SHALL BE NOTED ON THE SUBMITTAL DRAWINGS.
- 6.18 A SUBSTITUTION REQUEST MAY BE REQUIRED WHERE CONTRACTOR LOADS IMPOSED EXCEED AND/OR CONNECTION CONDITIONS DIFFER FROM THE BASIS OF DESIGN.

SCHEDULE OF SPECIAL INSPECTION SERVICES

ITEM	QUALIFICATIONS	SCOPE
1. MIX DESIGN / MATERIAL CERTIFICATION	ACI-CCI ICC-RCSI /SER	<ul style="list-style-type: none"> <li>COLLECT MIX DESIGNS AND VERIFY APPROPRIATE MIX USE DURING SPECIFIC INSTALLATION</li> </ul>
2. REINFORCEMENT INSTALLATION	SER/ ACI-CCI ICC-RCSI	<ul style="list-style-type: none"> <li>PERIODIC INSPECTION, PRIOR TO EACH POUR, OF REINFORCING STEEL AND WELDED WIRE FABRIC</li> <li>COLLECTION AND REVIEW OF CERTIFIED MILL TEST REPORTS</li> <li>CONTINUOUS INSPECTION OF REINFORCING STEEL WELDING</li> </ul>
3. CONCRETE PLACEMENT/ MONITORING FRESH CONCRETE SAMPLING & PREP OF TEST SAMPLES	ACI-CCI ICC-RCSI ACI-CFTT ACI-STT	<ul style="list-style-type: none"> <li>CONTINUOUS INSPECTION OF CAST-IN-PLACE CONCRETE PLACEMENT</li> <li>CONTINUOUS MONITORING OF SAMPLING OF FRESH CONCRETE, SLUMP TEST, AIR CONTENT TEST, TEMPERATURE OF CONCRETE AND CREATION OF STRENGTH TEST SPECIMENS</li> <li>CONTINUOUS INSPECTION OF BOLTS AND EMBEDS TO BE INSTALLED IN CONCRETE PRIOR TO AND DURING PLACEMENT</li> </ul>
4. FORMWORK GEOMETRY	ACI-CCI ICC-RCSI	<ul style="list-style-type: none"> <li>PERIODIC VERIFICATION, PRIOR TO EACH POUR, THAT FORMWORK GEOMETRY COMPLIES WITH CONTRACT DOCUMENTS</li> </ul>
5. EVALUATION OF CONCRETE STRENGTH	PE/ SER	<ul style="list-style-type: none"> <li>COLLECT AND REVIEW CONCRETE STRENGTH TEST REPORTS</li> <li>NOTIFY SER OF FAILING TESTS</li> </ul>
6. CURING AND PROTECTION	ACI-CCI ICC-RCSI	<ul style="list-style-type: none"> <li>PERIODIC INSPECTIONS OF CURING TEMPERATURE AND TECHNIQUES</li> </ul>
1. SITE PREPARATION	EIT PE/GE	<ul style="list-style-type: none"> <li>DETERMINE THAT SITE HAS BEEN PREPARED IN ACCORDANCE WITH THE APPROVED SOILS REPORT</li> </ul>
2. FILL PLACEMENT	EIT	<ul style="list-style-type: none"> <li>DETERMINE THAT MATERIAL USED AND MAXIMUM LIFT THICKNESS COMPLY WITH APPROVED SOILS REPORT</li> <li>VERIFY PLACEMENT OF PROPER MATERIALS BEHIND CONCRETE RETAINING WALLS</li> <li>VERIFY EXTENT AND SLOPE OF FILL PLACEMENT</li> </ul>
3. DENSITY EVALUATION	EIT	<ul style="list-style-type: none"> <li>DETERMINE THAT IN-PLACE DRY DENSITY OF THE COMPACTED FILL COMPLIES WITH APPROVED SOILS REPORT</li> </ul>
4. SHALLOW FOUNDATIONS	PE/GE	<ul style="list-style-type: none"> <li>INSPECT SOILS BELOW FOOTINGS FOR ADEQUATE BEARING CAPACITY</li> </ul>
1. MATERIAL CERTIFICATIONS	ICC-SMSI	<ul style="list-style-type: none"> <li>VERIFY CONFORMANCE OF UNITS, MORTAR, GROUT, AND OTHER MATERIALS</li> </ul>
2. INSTALLATION OF MASONRY	ICC-SMSI	<ul style="list-style-type: none"> <li>PERIODIC INSPECTION OF SIZE, LAYOUT, BONDING, AND PLACEMENT OF MASONRY UNITS</li> <li>PERIODIC INSPECTION OF MORTAR JOINTS, INCLUDING TOOLING AND FILLING OF BED.</li> </ul>
3. REINFORCEMENT	ICC-SMSI ACI-CCI	<ul style="list-style-type: none"> <li>PERIODIC INSPECTION OF GRADE, SIZE, AND TYPE OF BARS.</li> <li>PERIODIC INSPECTION OF LOCATION, PLACEMENT, POSITIONING, SUPPORT AND LAPPING</li> </ul>
4. GROUTING OPERATIONS	ICC-SMSI	<ul style="list-style-type: none"> <li>VERIFY GROUT SPACES COMPLY WITH SPECIFICATIONS AND DRAWINGS.</li> <li>CONTINUOUS INSPECTION OF PLACEMENT AND CONSOLIDATION OF GROUT.</li> </ul>
5. EVALUATION OF MASONRY STRENGTH	ICC-SMSI	<ul style="list-style-type: none"> <li>CONTINUOUS INSPECTIONS TO VERIFY UNITS CONFORM TO ASTM C 90</li> <li>CONTINUOUSLY SAMPLE AND TEST COMPRESSIVE STRENGTH OF GROUT PER ASTM C1019</li> </ul>

BAR SIZE	TENSION						COMPRESSION	
	f _c (PSI)						f _c (PSI)	
	4,000	5,000	7,000	8,500	10,000	12,000		
#4	25	23	19	18	20	20	15	
#5	31	28	24	22	20	20	19	
#6	37	34	28	27	24	24	23	
#7	54	49	41	39	35	35	27	
#8	62	56	47	44	39	39	30	
#9	70	63	53	50	44	44	34	
#10	79	71	60	56	50	50	39	
#11	108	96	82	77	68	68	43	

BAR SIZE	TENSION						COMPRESSION	
	f _c (PSI)						f _c (PSI)	
	4,000	5,000	7,000	8,500	10,000	12,000		
#4	33	30	25	23	21	21	19	
#5	40	36	31	29	26	26	19	
#6	48	44	36	35	31	31	23	
#7	70	64	53	51	46	46	27	
#8	81	73	61	57	51	51	30	
#9	91	82	69	65	57	57	34	
#10	103	92	78	73	65	65	39	
#11	139	125	106	100	89	89	48	

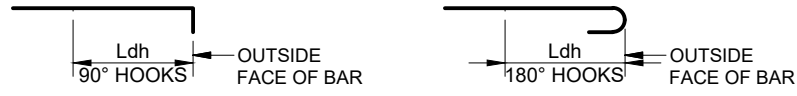
BAR SIZE	TENSION									
	f _c = 4,000 PSI		f _c = 5,000 PSI		f _c = 7,000 PSI		f _c = 8,500 PSI		f _c = 10,000 PSI	
	TOP (IN)	OTHER (IN)	TOP (IN)	OTHER (IN)	TOP (IN)	OTHER (IN)	TOP (IN)	OTHER (IN)	TOP (IN)	OTHER (IN)
#4	33	25	29	23	25	20	23	18	21	16
#5	41	31	36	28	31	24	29	22	26	20
#6	49	37	44	34	37	28	35	27	31	24
#7	71	54	63	49	54	41	50	39	45	35
#8	81	62	72	56	61	47	57	44	51	39
#9	91	70	81	63	69	53	64	50	58	44
#10	102	79	92	71	77	60	72	56	65	50
#11	141	108	126	96	106	82	99	77	89	68

BAR SIZE	TENSION				
	f _c (PSI)				
	3,000	4,000	5,000	7,000	8,500
#3	29	25	-	-	-
#4	29	25	23	19	18
#5	36	31	28	24	22
#6	43	37	34	28	27
#7	94	81	73	62	58
#8	107	93	83	70	66

BAR SIZE	TYPICAL DEVELOPMENT LENGTH SCHEDULE																					
	STANDARD BAR IN TENSION (L _d )						STANDARD HOOK IN TENSION (L _{dh} )						STANDARD BAR IN COMPRESSION (L _{dc} )									
	f _c (PSI)						f _c (PSI)						f _c (PSI)									
	3,000	4,000	5,000	7,000	8,500	10,000	12,000	3,000	4,000	5,000	7,000	8,500	10,000	12,000	3,000	4,000	5,000	7,000	8,500	10,000	12,000	
#3	17	15	13	12	12	12	12	8	8	7	6	6	6	6	9	8	8	8	8	8	8	8
#4	22	19	17	15	14	12	12	12	11	11	10	9	8	8	11	10	9	9	9	9	9	9
#5	28	24	22	18	17	15	15	16	15	15	13	12	11	10	14	12	12	12	12	12	12	12
#6	33	29	26	22	21	18	18	21	20	19	17	16	15	13	17	15	14	14	14	14	14	14
#7	48	42	38	32	30	27	27	27	25	24	22	20	18	17	20	17	16	16	16	16	16	16
#8	55	48	43	36	34	30	30	32	30	29	27	24	22	20	22	19	18	18	18	18	18	18
#9	62	54	48	41	38	34	34	39	36	35	32	29	27	24	25	22	21	21	21	21	21	21
#10	70	61	54	46	43	39	39	46	43	42	38	34	32	29	28	25	23	23	23	23	23	23
#11	96	84	74	63	60	53	53	72	67	65	59	53	49	45	39	34	32	32	32	32	32	32

TYPICAL LAP SPlice NOTES:

- ALL VALUES SHOWN IN THE SCHEDULES ARE IN INCHES, UNO.
- "CLASS A" SPlice LENGTH EQUALS THE BASIC DEVELOPMENT LENGTH (L_d) OF BARS IN TENSION.
- "CLASS B" SPlice LENGTH EQUALS "CLASS A" SPlice LENGTH MULTIPLIED BY 1.3.
- LAP SPICES OF ALL DEFORMED BARS SHALL BE "CLASS B" SPICES, UNO.
- "TOP" BARS ARE DEFINED AS HORIZONTAL BARS WITH MORE THAN 12 INCHES OF CONCRETE CAST BELOW THE BARS. "OTHER" BARS ARE ALL BARS FOR WHICH THE DEFINITION OF A "TOP" BAR DOES NOT APPLY.
- WHERE BARS OF DIFFERENT SIZE ARE LAP SPICED IN TENSION, THE LAP LENGTH IS DETERMINED BY THE SMALLER BAR, BUT SHALL NOT BE LESS THAN THE "CLASS A" SPlice LENGTH OF THE LARGER BAR.
- WHERE BARS OF DIFFERENT SIZES ARE LAP SPICED IN COMPRESSION, THE LAP LENGTH SHALL BE DETERMINED BY THE SMALLER BAR, BUT SHALL NOT BE LESS THAN THE COMPRESSION DEVELOPMENT LENGTH (L_{dc}) OF THE LARGER BAR.
- FOR CONCRETE STRENGTHS IN BETWEEN THOSE SHOWN, USE LENGTHS SHOWN FOR LOWER CONCRETE STRENGTH.
- WHERE BUNDLED BARS ARE USED, INCREASE SCHEDULED VALUES BY 20% FOR THREE BAR BUNDLES AND 33% FOR FOUR BAR BUNDLES.
- SCHEDULED VALUES ASSUME UNCOATED REINFORCING AND NORMAL WEIGHT CONCRETE.
- FOR EPOXY COATED BARS, MULTIPLY THE SCHEDULED VALUES BY 1.5 FOR STANDARD BARS, AND 1.2 FOR HOOKED BARS.
- MULTIPLY THE SCHEDULED VALUES FOR L_d BY 1.5 IF ONE OF THE BELOW REQUIREMENTS IS NOT MET:
  - A. CLEAR SPACING BETWEEN BARS BEING DEVELOPED OR SPICED IS AT LEAST 2 TIMES THE DIAMETER OF THE BAR AND CLEAR COVER IS AT LEAST THE DIAMETER OF THE BAR.
  - B. CLEAR SPACING BETWEEN BARS BEING DEVELOPED OR SPICED IS NOT LESS THAN THE DIAMETER OF THE BAR. CLEAR COVER IS AT LEAST THE DIAMETER OF THE BAR, AND STIRRUPS OR TIES ARE PROVIDED THROUGHOUT L_d.
- DEVELOPMENT LENGTH OF HOOKED BARS ARE MEASURED FROM THE OUTSIDE FACE OF THE BAR AS SHOWN BELOW:



REINFORCING STEEL CONCRETE COVERAGE		
CONDITION	CLEAR COVER REQUIRED	MINIMUM FIRE RATING PER IBC TABLE 702.1(1)
SLAB-ON-GRADE	1" TOP	4-HOUR
PILASTERS	3" BACKFILLED SIDE 2" NON-BACKFILLED SIDES	4-HOUR
BASEMENT WALLS	2" BACKFILLED SIDE 1" NON-BACKFILLED SIDES	2-HOUR 2-HOUR
ALL CONCRETE PLACED AGAINST SOIL	3"	4-HOUR
NON-PRESTRESSED CONCRETE		
CONCRETE EXPOSED TO SOIL OR WEATHER	1 1/2" @ #5 OR SMALLER BARS 2" @ #6 OR LARGER BARS	3-HOUR 4-HOUR
CONCRETE NOT EXPOSED TO SOIL OR WEATHER: COLUMNS AND BEAMS ELEVATED SLABS	1 1/2" (REF SECTIONS) 1"	4-HOUR 4-HOUR

For Review  
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Know what's below.  
Call before you dig.

GENERAL NOTES

SHEET NUMBER  
S0.1

Kimley»Horn



12/12/2024

CITY OF GALVESTON  
UTMB EST  
REHABILITATION

KHA PROJECT	067785106
DATE	12/12/2024
SCALE AS SHOWN	
DESIGNED BY:	APP
DRAWN BY:	APP
CHECKED BY:	MS

NO.	REVISIONS	DATE	BY

STATE OF TEXAS REGISTRATION NO. F-928  
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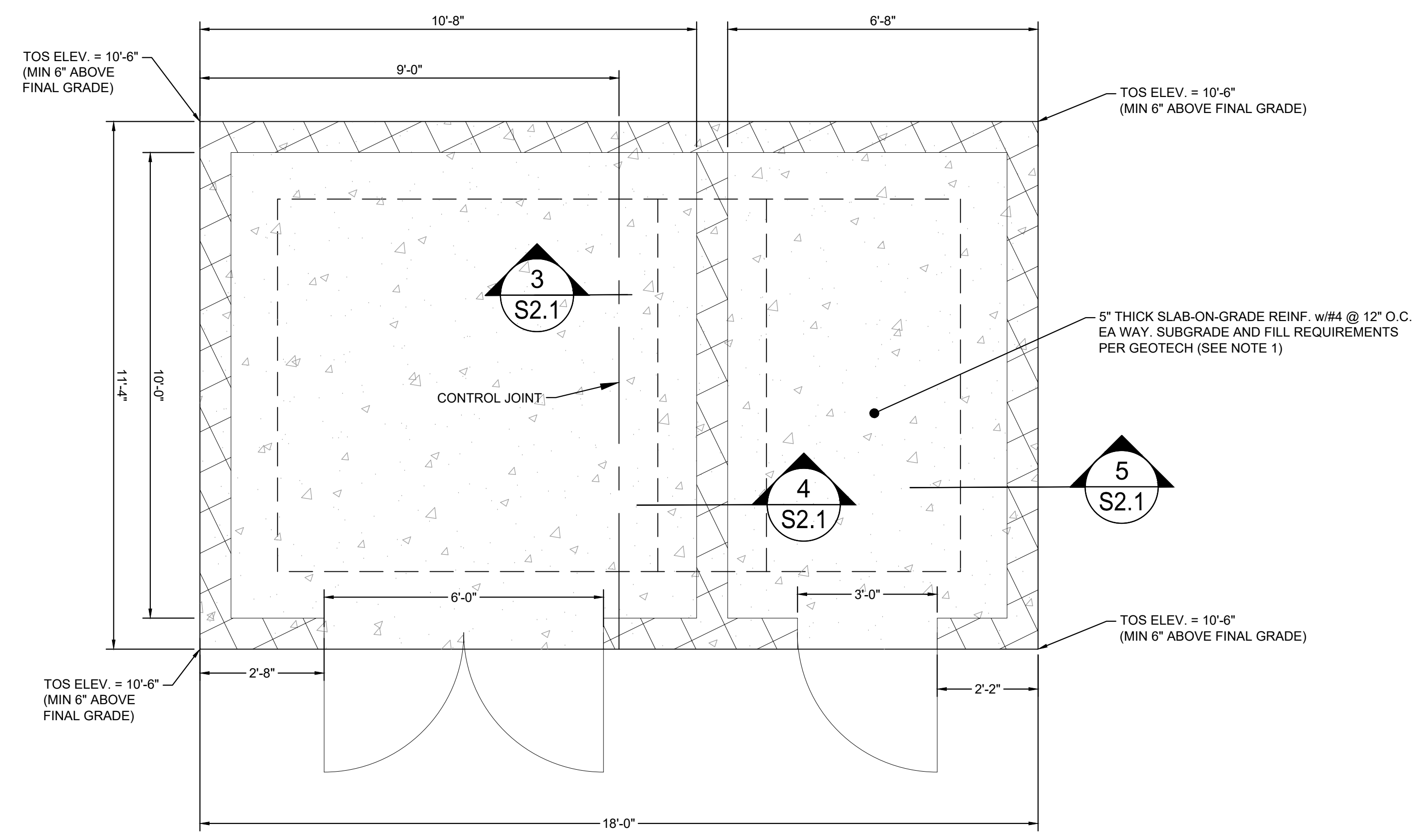
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Filename: sheets\ls-plan.dwg

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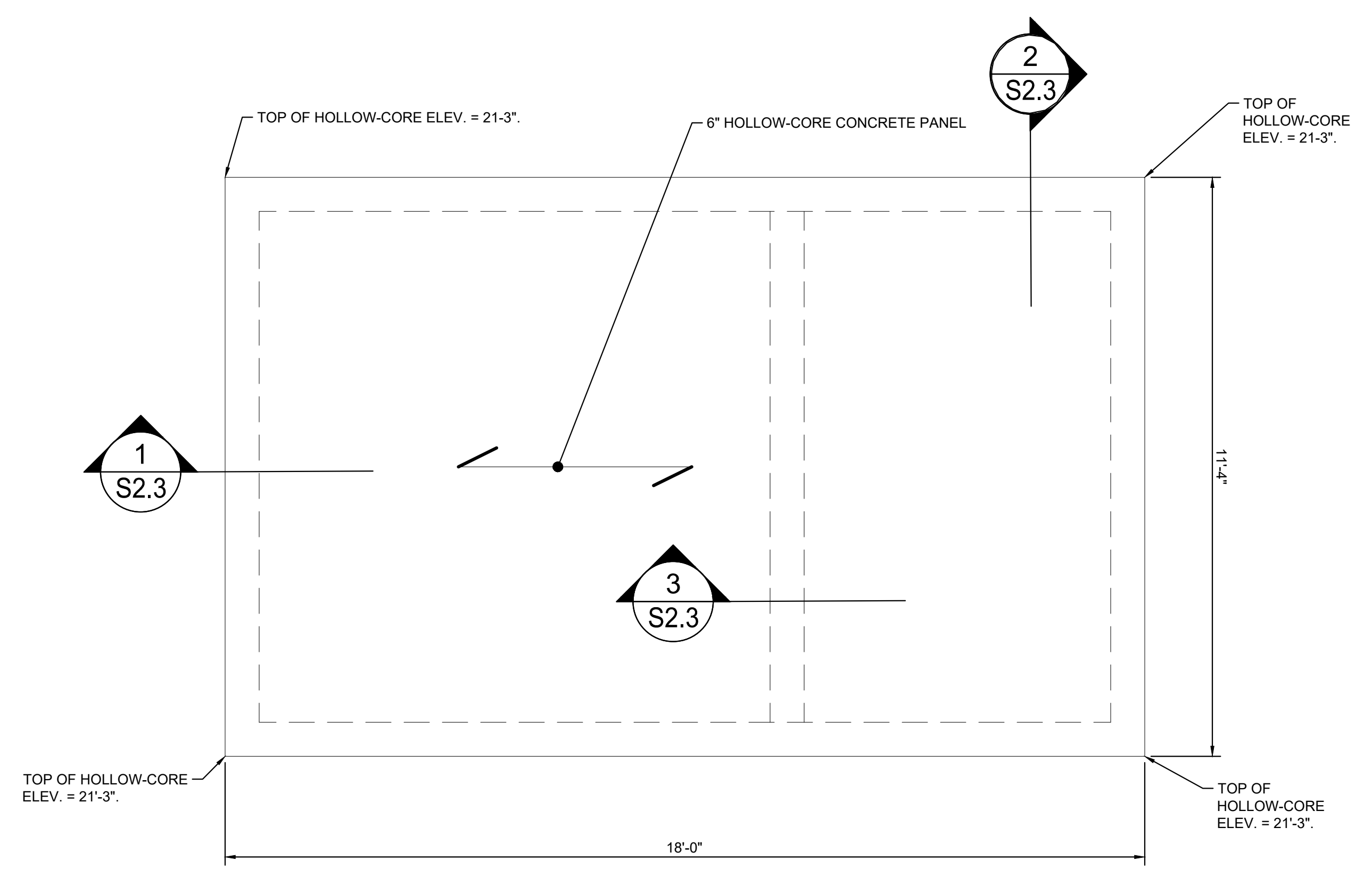
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**SHEET NOTES**  
 1. THE CONTRACTOR SHALL SUBMIT A GEOTECHNICAL REPORT FOR THIS SITE SIGNED AND SEALED BY A GEOTECHNICAL ENGINEER LICENSED IN THE STATE OF TEXAS. DESIGN MODIFICATIONS SHALL BE PREPARED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS AND SUBMITTED TO THE OWNER AND ENGINEER FOR REVIEW PRIOR TO FABRICATION OR INSTALLATION.



**1**  
 FOUNDATION PLAN  
 SCALE: 1/2" = 1'-0"

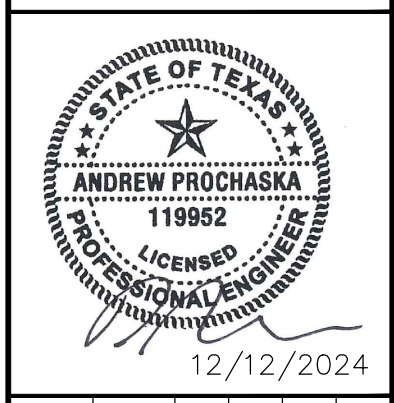


**2**  
 ROOF PLAN  
 SCALE: 1/2" = 1'-0"



REVISIONS	DATE	BY

**Kimley-Horn**  
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DATE	12/12/2024
SCALE AS SHOWN	
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DRAWN BY: APP	
CHECKED BY: MS	

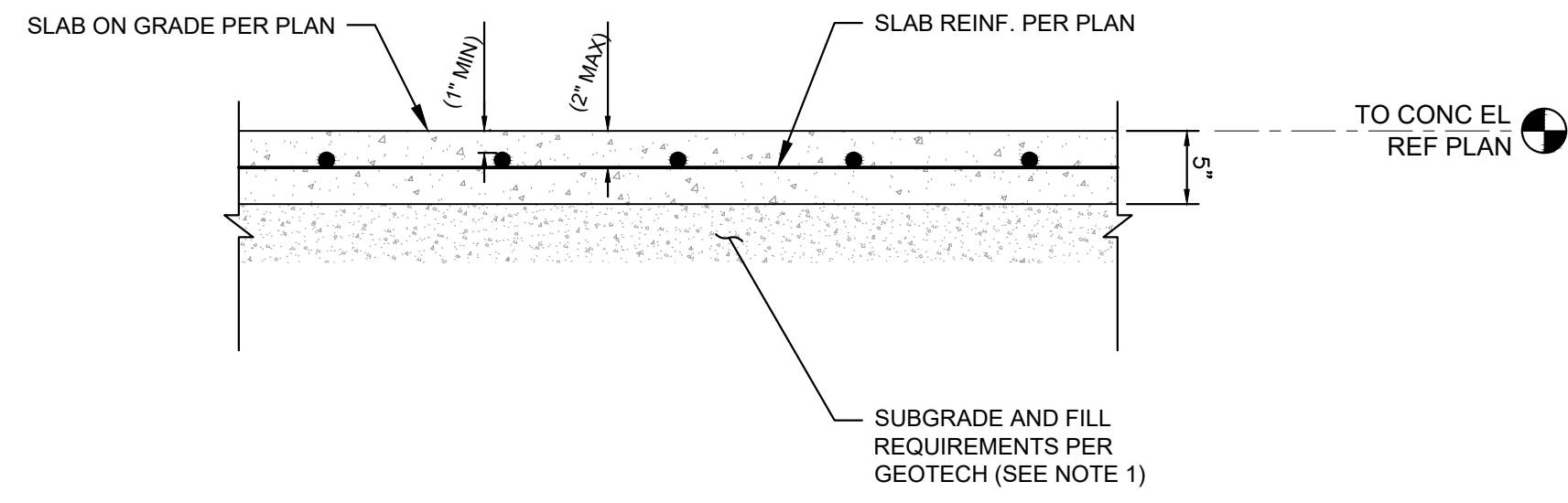
**CITY OF GALVESTON  
 UTMB EST  
 REHABILITATION**

PLAN VIEW

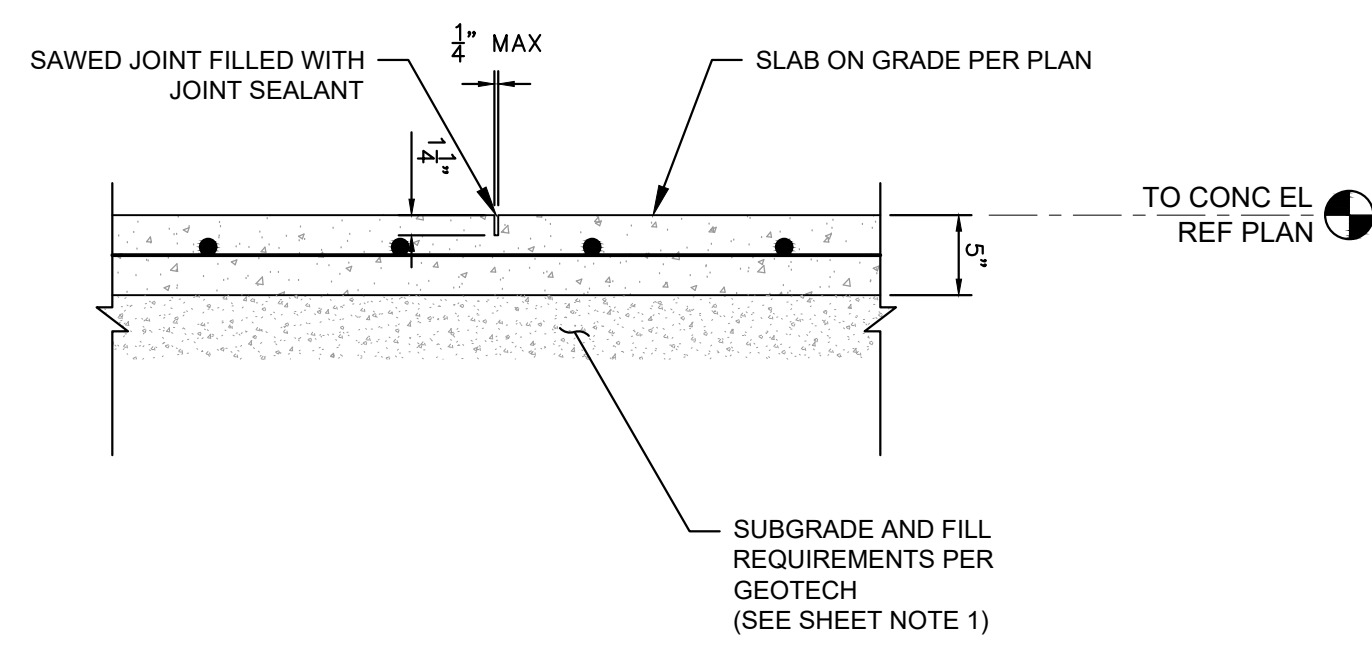
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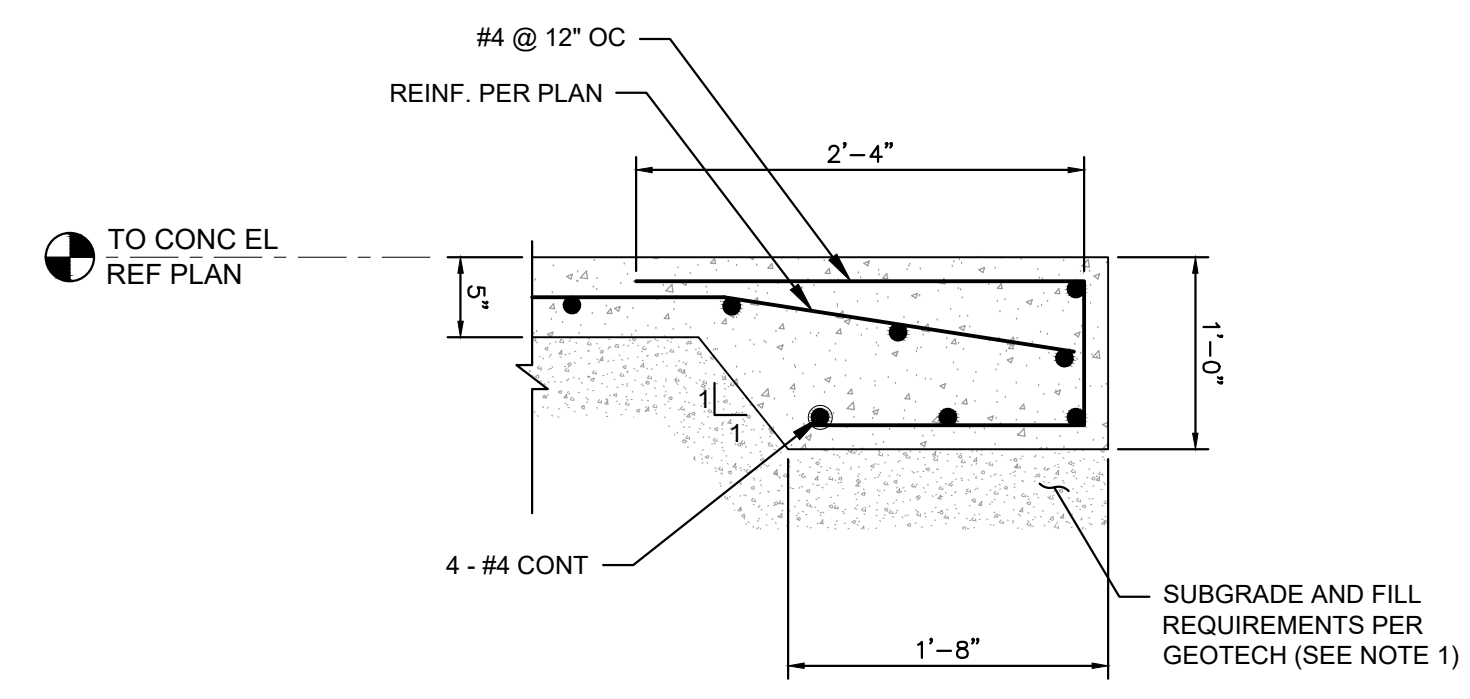


**1** TYPICAL SLAB ON-GRADE  
 S2.1 SCALE: 1" = 1'-0"

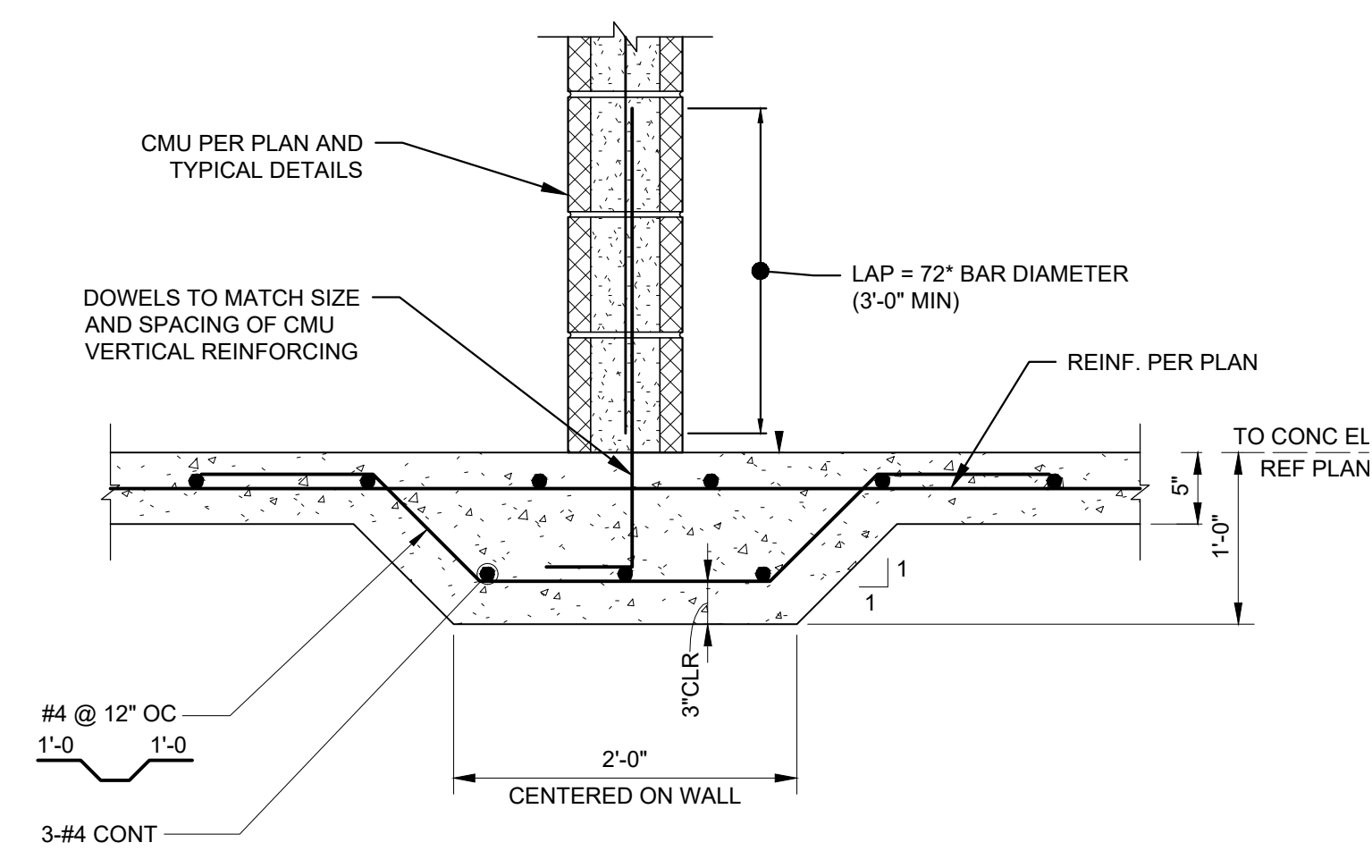


**3** TYPICAL SLAB ON-GRADE CONTROL JOINT  
 S2.1 SCALE: 1" = 1'-0"

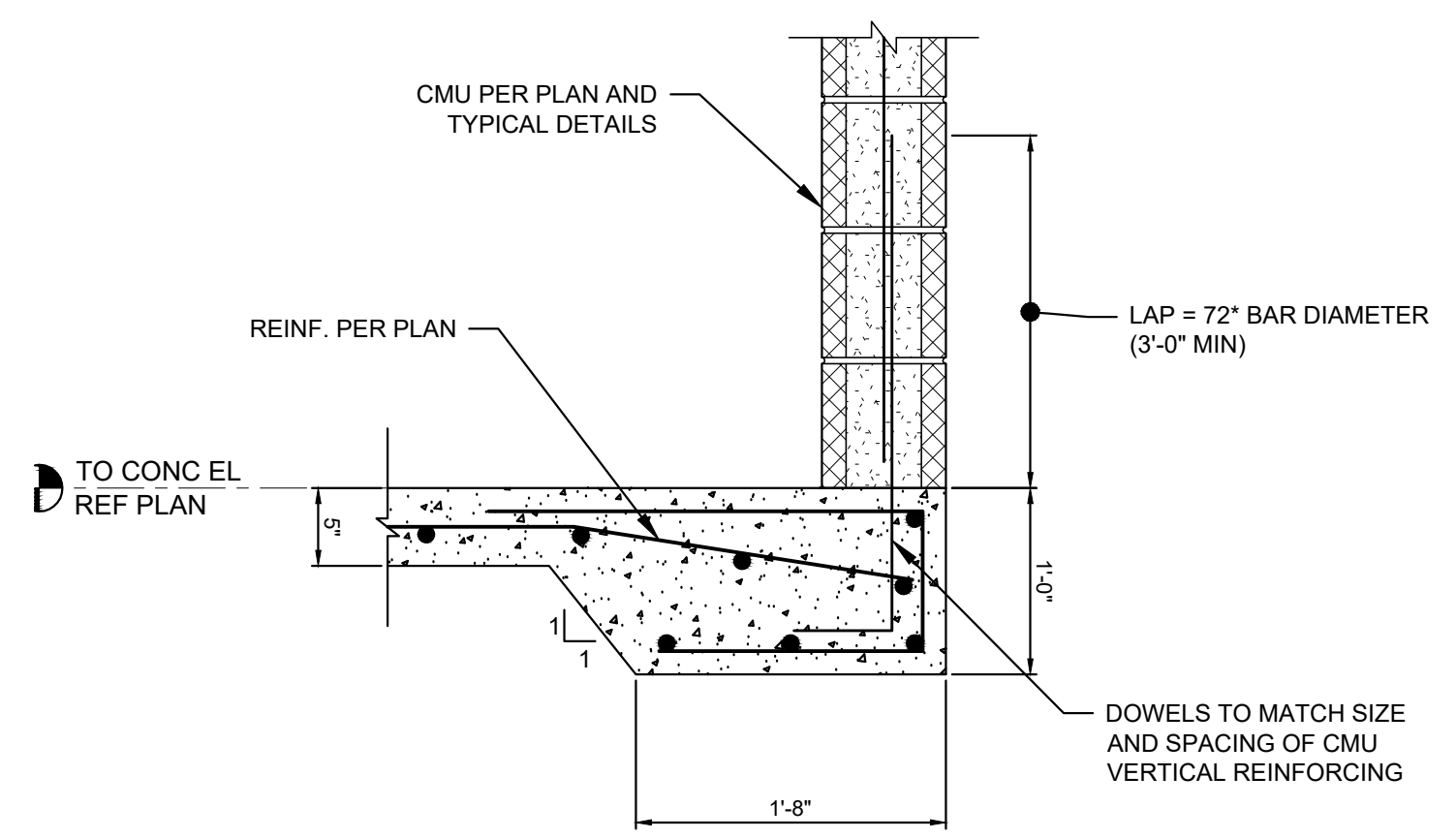
**NOTES:**  
 1. JOINT SHALL BE SAWED AS SOON AS CONCRETE SURFACE IS FIRM ENOUGH TO NOT BE DAMAGED BY THE BLADE AND BEFORE CONCRETE STARTS TO COOL.  
 2. CONTROL JOINTS SHOULD BE CONTINUOUS ACROSS INTERSECTING JOINTS AND NOT STAGGERED OR OFFSET. JOINTS THAT CREATE L- AND T-SHAPED PANELS SHOULD BE AVOIDED.



**2** TYPICAL SLAB ON-GRADE EDGE  
 S2.1 SCALE: 1" = 1'-0"



**4** THICKENED SLAB ON-GRADE  
 S2.1 SCALE: 1" = 1'-0"



**5** CMU WALL CONNX TO SLAB  
 S2.1 SCALE: 1" = 1'-0"

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NO.	REVISIONS	DATE	BY

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STATE OF TEXAS  
 ANDREW PROCHASKA  
 11982  
 LICENSED PROFESSIONAL ENGINEER  
 12/12/2024

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SCALE AS SHOWN	APP
DESIGNED BY	APP
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 UTMB EST  
 REHABILITATION**

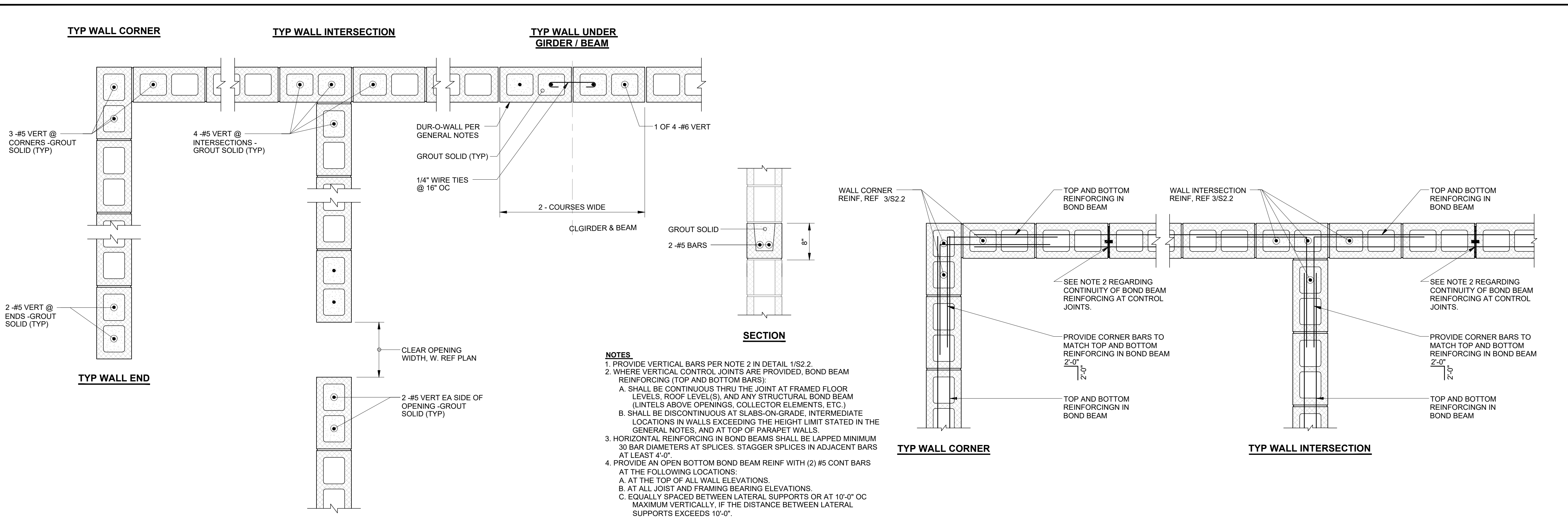
**FOUNDATION DETAILS**

SHEET NUMBER  
**S2.1**



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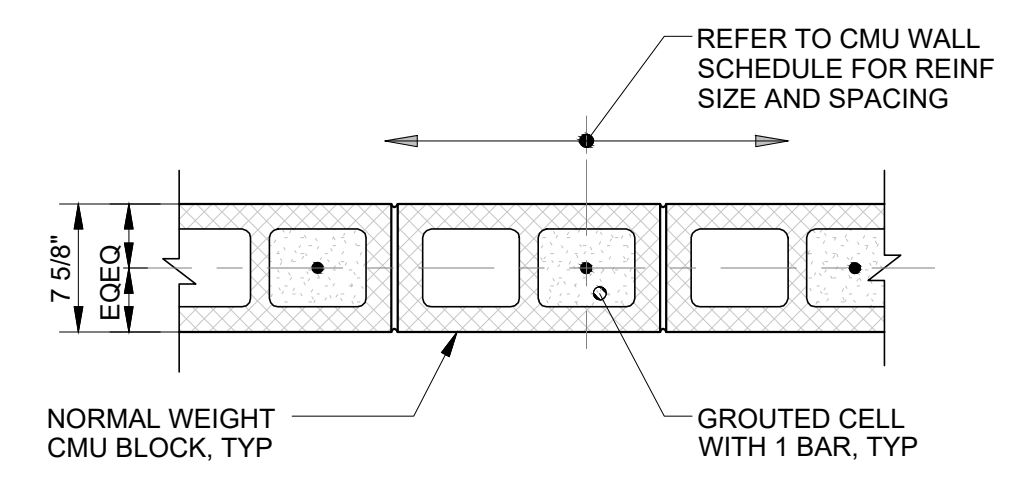


- NOTES**
- PROVIDE VERTICAL BARS PER NOTE 2 IN DETAIL 1/S2.2.
  - WHERE VERTICAL CONTROL JOINTS ARE PROVIDED, BOND BEAM REINFORCING (TOP AND BOTTOM BARS):
    - SHALL BE CONTINUOUS THRU THE JOINT AT FRAMED FLOOR LEVELS, ROOF LEVEL(S), AND ANY STRUCTURAL BOND BEAM (LINTELS ABOVE OPENINGS, COLLECTOR ELEMENTS, ETC.)
    - SHALL BE DISCONTINUOUS AT SLABS-ON-GRADE, INTERMEDIATE LOCATIONS IN WALLS EXCEEDING THE HEIGHT LIMIT STATED IN THE GENERAL NOTES, AND AT TOP OF PARAPET WALLS.
  - HORIZONTAL REINFORCING IN BOND BEAMS SHALL BE LAPPED MINIMUM 30 BAR DIAMETERS AT SPLICES. STAGGER SPLICES IN ADJACENT BARS AT LEAST 4'-0".
  - PROVIDE AN OPEN BOTTOM BOND BEAM REINF WITH (2) #5 CONT BARS AT THE FOLLOWING LOCATIONS:
    - AT THE TOP OF ALL WALL ELEVATIONS.
    - AT ALL JOIST AND FRAMING BEARING ELEVATIONS.
    - EQUALLY SPACED BETWEEN LATERAL SUPPORTS OR AT 10'-0" OC MAXIMUM VERTICALLY, IF THE DISTANCE BETWEEN LATERAL SUPPORTS EXCEEDS 10'-0".

**4**  
 S2.2 **TYPICAL CMU BOND BEAM DETAIL**  
 SCALE: 1" = 1'-0"

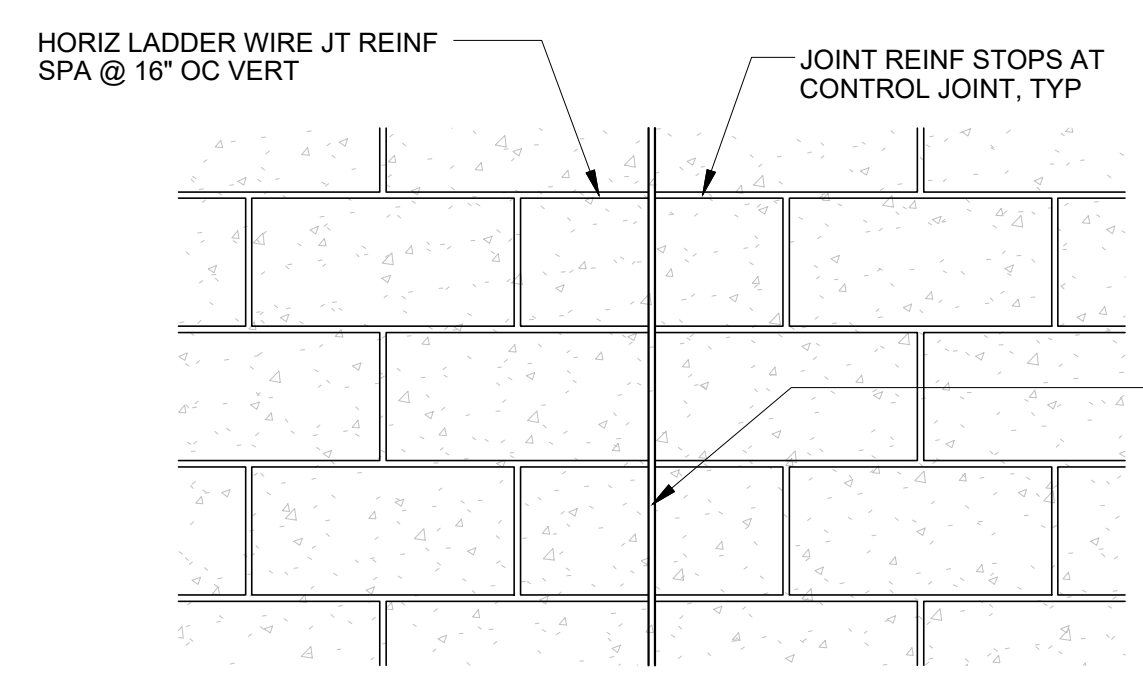
**3**  
 S2.2 **TYPICAL CMU REINFORCING DETAIL**  
 SCALE: 1" = 1'-0"

TYPE	HEIGHT (H)	BLOCK SIZE	VERT REINF
INTERIOR	0' < H < 10'	8"	#5 @ 48" OC
	10' ≤ H < 15'	8"	#5 @ 48" OC
	15' ≤ H < 20'	8"	#5 @ 32" OC
EXTERIOR	0' < H < 10'	8"	#6 @ 32" OC
	10' ≤ H < 15'	8"	#6 @ 32" OC
	15' ≤ H < 20'	8"	#6 @ 24" OC



- NOTES**
- FULLY GROUT ALL CELLS WITH REINFORCING. VERTICAL REINFORCING IN GROUTED CELLS AND PILASTERS SHALL BE LAPPED 72 BAR DIAMETERS AND WIRE TIED AT SPLICES, TYP UNO.
  - VERTICAL BARS ARE TO EXTEND A MINIMUM OF 6" INTO THE BOND BEAM AT THE TOP OF WALL. BOND BEAMS SHALL BE REINFORCED WITH CONTINUOUS BARS ALONG BEAM PER 6/S2.2.
  - ALL CMU BELOW GRADE SHALL BE FULLY GROUTED TO TOP OF SLAB.
  - PROVIDE AN OPEN BOTTOM BOND BEAM PER 4/S2.2.
  - PROVIDE HORIZONTAL JOINT REINFORCING AT 16" OC VERTICALLY, IN ADDITION TO CONTINUOUS REINFORCING, AND NOT MORE THAN 8" ABOVE AND BELOW OPENINGS IN MASONRY WALLS AND EXTENDING 12" BEYOND SAID OPENING. INTERRUPT JOINT REINFORCEMENT AT CONTROL AND EXPANSION JOINTS, UNLESS OTHERWISE INDICATED. CUT AND BEND REINFORCING UNITS AS DIRECTED BY MANUFACTURER FOR CONTINUITY AT CORNERS, RETURNS, OFFSETS, COLUMN FIREPROOFING, PIPE ENCLOSURES, AND OTHER SPECIAL CONDITIONS. JOINT REINFORCING SHALL CONSIST OF HOT-DIPPED GALVANIZED, CARBON STEEL CONFORMING TO ASTM A951, AND PER THE REQUIREMENTS BELOW:
    - JOINT REINFORCEMENT FOR SINGLE WYTHE WALLS SHALL CONSIST OF LADDER TYPE REINFORCEMENT WITH A MINIMUM OF TWO W1.7 (9 GA) DIAMETER SIDE RODS.
    - JOINT REINFORCEMENT FOR MULTI-WYTHE WALLS SHALL CONSIST OF TAB TYPE, EITHER LADDER OR TRUSS DESIGN, WITH 1 SIDE ROD AT EACH FACE SHELL OF BACKING WYTHE AND WITH RECTANGULAR TABS SIZED TO EXTEND AT LEAST HALFWAY THROUGH FACING WYTHE BUT WITH AT LEAST 5/8-INCH COVER ON OUTSIDE FACE. SIDE AND CROSS RODS SHALL BE W1.7 DIAMETER.

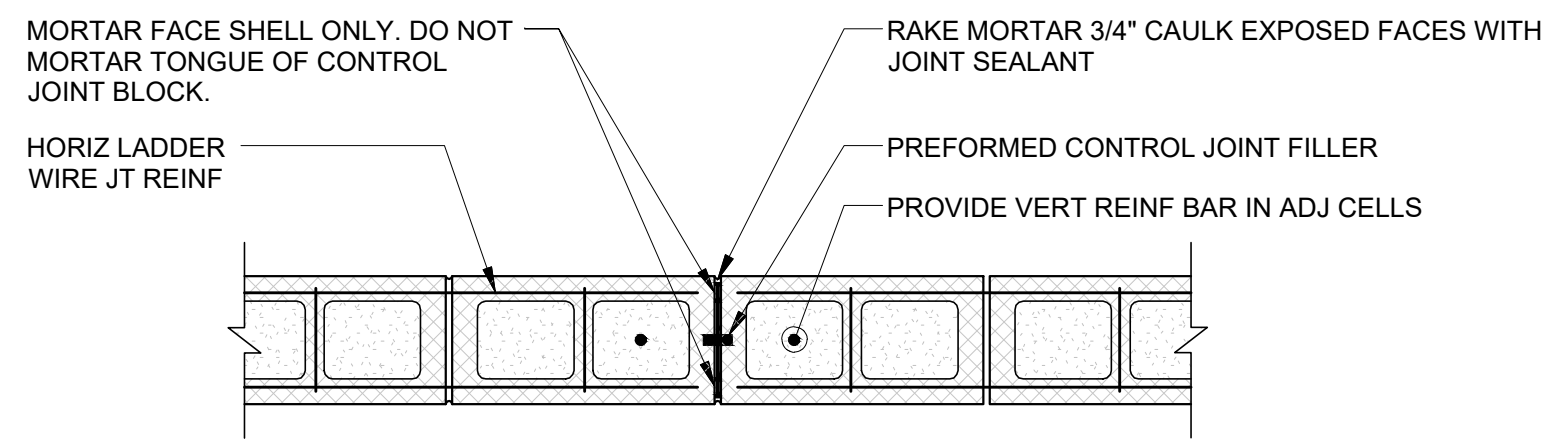
**1**  
 S2.2 **TYPICAL CMU WALL REINF DETAIL**  
 SCALE: 1" = 1'-0"



- CONTROL JOINT @ 24' MAX SPACING AND AT FOLLOWING LOCATIONS:
- AT CHANGES IN WALL HEIGHT AND AT FOUNDATION STEPS.
  - AT ONE END OF LINTELS OF WALL OPENINGS < 6', AT BOTH END OF LINTELS OF WALL OPENINGS > 6'.

- NOTES**
- CONTROL JOINTS MAY BE OFFSET A MAXIMUM DISTANCE OF 8". CROSS WIRES WITHIN THIS OFFSET SHALL BE CUT.

**ELEVATION**



- NOTES**
- WIDE FLANGED PREFORMED CONTROL JOINT FILLER MAY BE USED IN LIEU OF DETAIL SHOWN.

**PLAN**

**2**  
 S2.2 **CMU WALL CONTROL JOINT DETAIL**  
 SCALE: 1" = 1'-0"

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STATE OF TEXAS  
 ANDREW PROCHASKA  
 11992  
 LICENSED PROFESSIONAL ENGINEER  
 12/12/2024

KHA PROJECT	067785106
DATE	12/12/2024
SCALE AS SHOWN	AS SHOWN
DESIGNED BY:	APP
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**CITY OF GALVESTON  
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**CMU DETAILS**

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**S2.2**





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ABBREVIATIONS LEGEND					
A	AMPERE	EXIST.	EXISTING	MCB	AUXILIARY CONTACT
AC	ALTERNATING CURRENT	EXP.	EXPANSION	MCC	MAIN CIRCUIT BREAKER
ADJ	ADJUSTABLE	E/W	EACH WITH		
AFF	ABOVE FINISHED FLOOR	F	FAHRENHEIT	MCM	CONDUCTOR CROSS SECTIONAL AREA
AFG	ABOVE FINISHED GRADE	FC	FOOTCANDLE	MCP	MOTOR CIRCUIT PROTECTOR
AF	AMPERE FRAME	FCV	FLOW CONTROL VALVE	MCS	MOLDED CASE SWITCH
AH	AMPERE HOUR	FDR	FEEDER	MDP	MAIN DISTRIBUTION PANEL
AI	ANALOG INPUT	FDU	FILTER DISK UNIT	MH	METAL HALIDE
AIC	AMPERE INTERRUPTING CAPACITY	FIT	FLOW INDICATOR	MIN.	MINIMUM
ALT	ALTERNATOR	FIXT.	FIXTURE	MISC.	MISCELLANEOUS
AMP or A	AMPERE	FLEX.	FLEXIBLE	MFG	MANUFACTURE
AM	AMMETER	FLM	FLOW METER	MFGR	MANUFACTURER
AO	ANALOG OUTPUT	FLD. LT.	FLOODLIGHT	MLO	MAIN LUG ONLY
AR	ANALYZER RETURN	FLUOR.	FLUORESCENT	MO	MOTOR OPERATED
AS	AMMETER SWITCH	FO	FIBER OPTIC	MOD	MODULE
ASP	AUTOSENSORY PANEL	FPL	FLOOD PLAIN LEVEL	MOV	MOTOR OPERATED VALVE
AT	AMPERE TRIP	FT.	FEET	MSB	MAIN SERVICE BREAKER
ATD	AUTODIALER	FVNR	FULL VOLTAGE NON-REVERSING	MSP	MANUAL SPEED POT
ATS	AUTOMATIC TRANSFER SWITCH	FVR	FULL VOLTAGE REVERSING	MTR	MOTOR
AUX.	AUXILIARY	GALV	GALVANIZED	MTG	MOUNTING
AWG	CONDUCTOR CROSS SECTIONAL AREA	GEN	GENERATOR	MTS	MANUAL TRANSFER SWITCH
BAT.	BATTERY	GFI	GROUND FAULT INTERRUPT	N	NEUTRAL
BC	BYPASS CONTACTOR	GFC	GROUND FAULT INTERRUPT CIRCUIT	N	NORMAL
BKR.	BREAKER	GFIC	GROUND FAULT INTERRUPT CIRCUIT	NEC	NATIONAL ELECTRICAL CODE
BLC	BLEACH	GND	GROUND	NEU	NEUTRAL
BLDG.	BUILDING	GPH	GALLONS PER HOUR	N.I.C.	NOT IN CONTRACT
BLR	BLOWER	GST	GROUND STORAGE TANK	No.	NUMBER
BP	BOOSTER PUMP	H	HEIGHT	NPT	NATIONAL PIPE THREAD
BTUH	BRITISH THERMAL UNITS PER HOUR	HL	HIGH LEVEL	OAL	OUTSIDE AIR LOUVER ON CENTER
C or CND	CONDUIT	HMI	HUMAN MACHINE INTERFACE	OC	ON CENTER
CAT	CATALOG	HOA	HAND-OFF-AUTO	OCBW	ON CENTER BOTH WAYS
CBP	CHLORINE BOOSTER PUMP	HP	HORSEPOWER	OHD	OVERHEAD DOOR OPERATOR USER INTERFACE
CDF	CLOTH DISK FILTER	HTR.	HEATER	OUI	OPERATOR USER INTERFACE
CHL	CHLORINE	HVP	HIGH VOLTAGE PANEL	OL	OVERLOAD
CHM	CHEMICAL	HYD	HYDROTANK	OT	OVERTEMP OR OVERTORQUE
CFH	CUBIC FEET PER HOUR	HYP	HYPOCHLORITE	P	POLE
CKT. BKR.	CIRCUIT BREAKER	HZ	HERTZ	PAC	PROGRAMMABLE AUTOMATION CONTROLLER
CKT.	CIRCUIT	IC	ISOLATION CONTACTOR	PCV	PRESSURE CONTROL VALVE
CL2	CHLORINE	ILLUM.	ILLUMINATE	PE	PHOTOELECTRIC
CLR	CLARIFIER	INC.	INCANDESCENT	PEC	PHOTO ELECTRIC CELL
CNTRL	CONTROLS	INF	INFLUENT	PFCC	CORRECTION CAPACITOR
CNTRLR	CONTROLLER	IN.	INCH	PFR	PHASE FAILURE RELAY
Co.	COMPANY	INCAN	INCANDESCENT	PH or Ø	PHASE
COAX	COAXIAL	INTR	INTRUSION	PIT	PRESSURE INDICATOR TRANSMITTER
COH	CITY OF HOUSTON	I/O	INPUT/OUTPUT	PLC	PROGRAMMABLE LOGIC CONTROLLER
COM	COMMUNICATIONS (DATA)	ISP	INTRUSION SYSTEM	PM	POWER MONITOR
CONC.	CONCRETE	ISW	CURRENT SWITCH	PNL	PANEL
CONT.	CONTINUE	J-BOX	JUNCTION BOX	PP	POLY POLE
CPT	CONTROL POWER TRANSFORMER	JWH	JACKET WATER HEATER	PPH	POLYPHOSPHATE
CPU	CENTRAL PROCESSING UNIT	KAIC	KILO-AMPERES INTERRUPTING CAPACITY	POS	POSITION
CSBE	CONDUIT SEALING BUSHING EXTERNAL	KCMIL	KILO-CIRCULAR MIL	PR	PROBE RELAY
CT	CURRENT TRANSFORMER	KV	KILOVOLT	PROP.	PROPOSED
Cu.	COPPER	KVA	KILOVOLT-AMPERES	PS	POWER SUPPLY
DB or db	DECIBELS	KVAR	KILOVAR (KILOVOLT-AMPERE-REACTIVE)	PSI	POUNDS PER SQUARE INCH
DC	DIRECT CURRENT	KWH	KILOWATT HOUR	PT	POTENTIAL TRANSFORMER
DET.	DETAIL	L	LOAD	PTT	PUSH-TO-TEST
DI	DIGITAL INPUT	L	LENGTH	PVC	POLYVINYL CHLORIDE
DIA. or Ø	DIAMETER	LAS	LIQUID AMMONIA SULFATE	PWR	POWER
DIFF	DIFFERENTIAL	LBS	POUNDS	QTY	QUANTITY
DIM	DIMENSION	LCP	LOCAL CONTROL PANEL	R	RELAY
DISC. SW.	DISCONNECT SWITCH	LFX	LIGHT FIXTURE	RC	RUN CONTACTOR
DO	DIGITAL OUTPUT	LIT	LEVEL INDICATOR TRANSMITTER	RCPT.	RECEPTACLE
DPDT	DOUBLE POLE, DOUBLE THROW	LO	LOW	RF	REACTIVE FILTER
DO	DISSOLVED OXYGEN	L/R	LOCAL/REMOTE	RGS	RIGID GALVANIZED STEEL ROOM
DS	DOOR INTRUSION SWITCH	LP or LVP	LIGHTING PANEL	RM	ROOM
DWG	DRAWING	LS	LIMIT SWITCH	RSC	RIGID STEEL CONDUIT
E	EMERGENCY	LTG	LIGHTING	RTU	REMOTE TERMINAL UNIT
ELECT.	ELECTRICAL	LV	LOW VOLTAGE	RVAT	REDUCED VOLTAGE AUTOTRANSFORMER
ELEV.	ELEVATION	LVP	LOW VOLTAGE PANEL	RVNR	REDUCED VOLTAGE NON-REVERSING
EMERG.	EMERGENCY	M	MOTOR RUN CONTACT		
EO	ELECTRONICALLY OPERATED	M	METER		
EPB	ELECTRIC PULL BOX	mA	MILLIAMPERE		
ETM	ELAPSE TIME METER	MAX	MAXIMUM		
ES	ETHERNET SWITCH	Max	MOTOR STARTER		
ESP	ETHERNET SWITCH POWER				
EST	ELEVATED STORAGE TANK				

ONE-LINE DIAGRAM LEGEND	
SYMBOL	DESCRIPTION
•	CONTACT POINT
(GFI)	GROUND FAULT INTERRUPTER
	CIRCUIT BREAKER
	STARTER CONTACT
	GROUND
(RVAT)	REDUCED VOLTAGE AUTO TRANSFORMER STARTER
(SSRV)	SOLID STATE REDUCED VOLTAGE
(VFD)	VARIABLE FREQUENCY DRIVE
	THERMAL OVERLOAD RELAY
(RF)	REACTIVE FILTER
	MOTOR, 3 PHASE AND 1 PHASE
	GENERATOR
(ETM)	ELAPSE TIME METER
(R)	INDICATING LIGHT A-AMBER; B-BLUE; G-GREEN; R-RED; Y-YELLOW; W-WHITE
(HOA)	HAND-OFF-AUTO
(RS)	RUN-STOP
	HEATER
	FUSE
	POWER FACTOR CORRECTION CAPACITOR
	VOLTMETER
(A)	AMMETER
(AS)	AMMETER SWITCH
	CURRENT TRANSFORMER
	POTENTIAL TRANSFORMER
	COMBINATION MOTOR STARTER
	FUSED DISCONNECT SWITCH
(VCP)	VENDOR CONTROL PANEL
(PM)	POWER MONITOR
(T)	THERMOSTAT
(SPD) OR (SP)	SURGE PROTECTION
(PFR)	PHASE FAIL RELAY
(BC)	BATTERY CHARGER
(GB)	GROUND BUS BAR
(NB)	NEUTRAL BUS BAR
(MS)	MOISTURE SENSOR
(TS)	TEMPERATURE SENSOR
	TO BE REMOVED

LINEWEIGHT LEGEND	
SYMBOL	DESCRIPTION
	LIGHT LINEWEIGHT (EXISTING)
	HEAVY LINEWEIGHT (PROPOSED)
	LIGHT DASHED LINEWEIGHT (FUT.)

CONTROL DIAGRAM LEGEND	
SYMBOL	DESCRIPTION
(CR)	CONTACT RELAY, 4 POLE UNIVERSAL - PLUG IN
	CIRCUIT BREAKER OR MCP
(TD)	TIME DELAY RELAY
(R)	INDICATING LIGHT A-AMBER; B-BLUE; G-GREEN; R-RED; Y-YELLOW; W-WHITE
(M)	MAGNETIC MOTOR STARTER
	HOLDING COIL CONTACT (NORMALLY OPEN - NORMALLY CLOSED)
	CONTROL COIL CONTACT (NORMALLY OPEN - NORMALLY CLOSED)
(ISW)	CURRENT SWITCH
(ETM)	ELAPSE TIME METER
	FUSE
	HEATER
	TERMINAL BLOCK
(F) PP	FLASHER MODULE
	ALARM HORN
	RECEPTACLE
	OVERLOAD, NORMALLY CLOSED
	PRESS-TO-TEST INDICATION LIGHT
	CONTROL POWER TRANSFORMER
	2 POSITION SELECTION SWITCH
	HAND-OFF-AUTO SWITCH
	PUSHBUTTON
	ON-OFF SWITCH
	SOLENOID VALVE
	FLOAT OPERATED SWITCH, OPENS ON RISE
	FLOAT OPERATED SWITCH, CLOSSES ON RISE
	TIME DELAY RELAY CONTACT NORMALLY CLOSED, (TDC - TIME DELAY CLOSING) (TDO - TIME DELAY OPENING)
	TIME DELAY RELAY CONTACT NORMALLY OPEN, (TDC - TIME DELAY CLOSING) (TDO - TIME DELAY OPENING)
	FLOW SWITCH, OPENS ON FLOW
	FLOW SWITCH, CLOSSES ON FLOW
	PRESSURE SWITCH, OPENS ON RISING PRESSURE
	PRESSURE SWITCH, CLOSSES ON RISING PRESSURE
	TEMPERATURE ACTUATED SWITCH, OPENS ON RISE
	TEMPERATURE ACTUATED SWITCH, CLOSSES ON RISE
	LIMIT SWITCH, NORMALLY OPEN
	LIMIT SWITCH, NORMALLY OPEN, HELD CLOSED
	LIMIT SWITCH, NORMALLY CLOSED
	LIMIT SWITCH, NORMALLY CLOSED, HELD OPEN
	MOUNTED ON INNER PANNEL
	INSTALLED OUTSIDE OF PANEL
	CONTROL PANEL TERMINAL STRIP

- GENERAL NOTES:**
- INSTALLATION SHALL BE ACCORDING TO CURRENT NEC, INCLUDING ALL APPLICABLE LOCAL ORDINANCES. WIRING AND DETAILS COMMONLY DESCRIBED IN CODE MAY NOT BE SHOWN ON PLANS, BUT ARE APPLICABLE PER CODE REQUIREMENTS.
  - CONTRACTOR IS ADVISED TO READ ALL ELECTRICAL RELATED SPECIFICATION SECTIONS PRIOR TO BIDDING AND CONSTRUCTION. SEE SPECIFICATION 16050 FOR LIST OF PRE-QUALIFIED ELECTRICAL CONTRACTORS AND PANEL FABRICATORS.

PLAN LEGEND	
SYMBOL	DESCRIPTION
	BURIED CONDUIT
	EXPOSED CONDUIT
	HIDDEN CONDUIT
	HOMERUN TO PANEL OR MCC AS NOTED (DASHED LINE INDICATES HIDDEN CONDUIT)
	SECTION
	ELEVATION
(ABC123)	CONDUIT TAG
	DETAIL REFERENCE
	TO BE REMOVED
	CONDUIT END CAP
	GROUND ROD
	SINGLE CONVENIENCE RECEPTACLE
	DUPLEX CONVENIENCE RECEPTACLE (WP INDICATES CAST WEATHER PROOF OUTLET BOX AND COVER)
	QUAD RECEPTACLE
	208 VOLT, SINGLE SPECIAL PURPOSE RECEPTACLE
	240 VOLT, SINGLE SPECIAL PURPOSE RECEPTACLE
	SURFACE MOUNTED RECEPTACLE
	SINGLE POLE TOGGLE SWITCH (WP INDICATES CAST WEATHER PROOF OUTLET BOX AND COVER)
	3 WAY SWITCH - 4 WAY SWITCH
	MOTOR SWITCH
	SURFACE MOUNTED SWITCH
	TELEPHONE UTILITY SYSTEM OUTLET
	DOOR SWITCH
	OVERHEAD DOOR SWITCH
	ELECTRIC THERMOSTAT
	PHOTOELECTRIC CELL
	JUNCTION BOX (J-BOX)
	SOLENOID VALVE
	SENSOR
	EXIT SIGN
	CONDUIT TURN
	SURVEILLANCE CAMERA

KHA PROJECT: 067785106

DATE: December 2024

SCALE: N/A

DESIGNED BY: SM

DRAWN BY: TA

CHECKED BY: EB

**Kimley»Horn**

STATE OF TEXAS REGISTRATION NO. F-928  
 11700 KATY FREEMAN SUITE 800 HOUSTON, TX 77079  
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REVISIONS

No.	DATE	BY

**CITY OF GALVESTON**  
**UTMB EST**  
**REHABILITATION**

**ELECTRICAL ABBREVIATIONS, LEGENDS, AND GENERAL NOTES**

**BURRER ENGINEERING**

17217 N. Eldridge, Tomball, TX 77377  
 Tel: 832-761-5220

TBPE No. F-20420  
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SHEET NUMBER

**E-001**

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2025-08-01 12:32:58, Soodm  
Plotted, By: 2024-12-16 22:56:02 (ELECTRICAL GENERAL NOTES)  
Last Saved: c:\users\soodm\burrer engineering dropbox\projects\201-kha houston\2306 - city of galveston utmb est  
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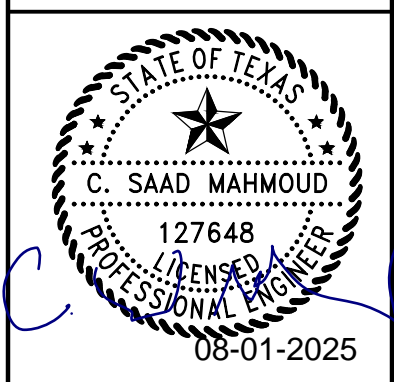
**GENERAL NOTES:**

- INSTALLATION SHALL BE PER LATEST VERSION OF NATIONAL ELECTRICAL CODE, AND ALL APPLICABLE LOCAL CODES/ORDINANCES. NOT ALL CODE AND STANDARD REQUIREMENTS MAY BE SHOWN ON PLANS. CONTRACTOR SHALL ADHERE TO CODES AND STANDARDS REGARDLESS OF BEING SHOWN ON PLANS OR SPECIFICATIONS IN DETAILED FASHION.
- THE NOTES CONTAINED ON THIS SHEET ARE PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR WHEN WORKING IN THE FIELD.
- ALL EQUIPMENT, WIRING, ETC. SHALL BE INSTALLED AND GROUNDED IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, LOCAL CODES, AND INDUSTRY STANDARDS (I.E. UL, NEMA, IEEE, ANSI, ETC.) THE DRAWING NOTES AND DETAILS SHALL BE COMPLIED WITH, IN ADDITION TO THE REQUIREMENTS IN THE SPECIFICATIONS.
- ALL RACEWAY INSTALLATIONS SHALL BE INSTALLED IN A MANNER TO PREVENT CONFLICTS WITH EQUIPMENT AND STRUCTURAL CONDITIONS. ALL EXPOSED RACEWAY SHALL BE INSTALLED PARALLEL TO BEAMS, CEILINGS, FLOORS AND WALLS.
- CONDUITS SHALL BE TERMINATED IN A NEAT AND WORKMANLIKE MANNER STRICTLY IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND THE NATIONAL ELECTRICAL CODE.
- CONDUITS TERMINATED INTO ENCLOSURES SHALL BE PERPENDICULAR TO THE WALLS OF THE ENCLOSURE. THE USE OF SHORT SEAL TIGHT ELBOW FITTINGS FOR SUCH TERMINATIONS WILL NOT BE PERMITTED.
- ALL RACEWAY INSTALLATIONS, CROSSING EXPANSION JOINTS OR TRANSITIONS FROM BELOW GRADE TO EXPOSED ABOVE GRADE, SHALL HAVE EXPANSION OR EXPANSION/DEFLECTION TYPE FITTINGS AS SPECIFIED FOR THE APPLICATION. CONTRACTOR SHALL COORDINATE WITH VENDORS AND MANUFACTURER'S AS REQUIRED.
- NO CONDUIT SMALLER THAN 1 IN., NOR WIRE SMALLER THAN NO. 12 AWG CU, SHALL BE PERMITTED UNLESS SPECIFICALLY NOTED.
- ALL UNDERGROUND SINGLE CONDUITS, AND DUCTBANKS WITH MULTIPLE CONDUITS, SHALL BE RIGID PVC SCHEDULE 80 CONDUIT ENCASED IN REINFORCED RED CONCRETE. CONCRETE SHALL BE DYED RED PRIOR TO PLACEMENT. THE CONTRACTOR SHALL FIELD VERIFY THE ROUTING OF ALL EXISTING UNDERGROUND UTILITIES. CONTRACTOR MAY UTILIZE MEDIUM WALL REINFORCED THERMOSETTING RESIN (MW-RTRC) IN LIEU OF PVC SCH 80 AND PVC COATED RGS.
- ALL CHANGES OF DIRECTION GREATER THAN 20 DEGREES IN UNDERGROUND SINGLE, OR DUCTBANKS OF MULTIPLE CONDUITS, SHALL BE ACCOMPLISHED USING PVC COATED RGS LONG RADIUS BENDS. BENDS OF PVC CONDUIT GREATER THAN 20 DEGREES, OR THE USE OF FLEXIBLE CONDUIT OF ANY TYPE, WILL NOT BE PERMITTED.
- LIQUID TIGHT FLEXIBLE ALUMINUM CONDUIT SHALL BE USED FOR THE PRIMARY AND SECONDARY OF TRANSFORMERS, GENERATOR TERMINATIONS, AND OTHER EQUIPMENT WHERE VIBRATION IS PRESENT. USE IN OTHER LOCATIONS IS NOT PERMITTED EXCEPT FOR CONNECTIONS TO INSTRUMENTATION TRANSMITTERS WHERE MULTIPLE PENETRATIONS ARE REQUIRED.
- LIQUID TIGHT FLEXIBLE ALUMINUM CONDUIT SHALL HAVE A MAXIMUM LENGTH NOT GREATER THAN THAT OF A FACTORY MANUFACTURED LONG BEND RADIUS ELBOW OF CONDUIT TRADE SIZE USED. THE MAXIMUM BENDING RADIUS SHALL NOT BE LESS THAN THAT SHOWN IN NEC CHAPTER 9, TABLE 2.
- THE WIRING DIAGRAMS, BLOCK DIAGRAMS, QUANTITIES, SIZE OF WIRES, AND CONDUIT REPRESENT A SUGGESTED ARRANGEMENT BASED UPON SELECTED STANDARD COMPONENTS OF ELECTRICAL EQUIPMENT. MODIFICATIONS ACCEPTABLE TO THE ENGINEER MAY BE MADE BY THE CONTRACTOR TO ACCOMMODATE EQUIPMENT APPROVED.
- ALL MODIFICATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. THE BASIC SEQUENCE AND METHOD OF CONTROL SHALL BE MAINTAINED AS INDICATED ON THE DRAWINGS AND/OR SPECIFIED.
- ALL JUNCTION BOXES AND TERMINATION BOXES SHALL BE NEMA 4X STAINLESS STEEL.
- WHERE RACEWAYS ENTER JUNCTION BOXES OR CONTROL PANELS CONTAINING ELECTRICAL OR INSTRUMENTATION EQUIPMENT, ALL ENTRANCES SHALL BE SEALED WITH LIQUID TIGHT SEALANT. TOP PENETRATIONS ARE NOT ACCEPTABLE.
- ALL EQUIPMENT AND ELECTRICAL EQUIPMENT ENCLOSURE LOCATIONS, OR TERMINAL BOX LOCATIONS ARE APPROXIMATE. THE EXACT LOCATIONS SHALL BE COORDINATED WITH AND APPROVED BY OWNER/ENGINEER DURING CONSTRUCTION AT NO ADDITIONAL COST TO OWNER.
- ALL EQUIPMENT AND ELECTRICAL EQUIPMENT DIMENSIONS ARE APPROXIMATE. ALL EQUIPMENT AND ELECTRICAL ENCLOSURES SHALL BE VERIFIED WITH EQUIPMENT SUPPLIERS. ALLOW FOR LOCATION CHANGES UP TO 40 FEET FOR ALL EQUIPMENT. INCLUDE IN BID PRICE. THE EXACT LOCATIONS OF ALL ELECTRICAL EQUIPMENT AND ROUTING OF ALL CABLES/CONDUITS SHALL BE COORDINATED WITH, AND APPROVED, BY THE OWNER/ENGINEER DURING CONSTRUCTION.
- ULTIMATE ROUTING PATH IS ULTIMATE RESPONSIBILITY OF CONTRACTOR.
- PROVIDE CONDUIT SEALS FOR CONDUIT PENETRATIONS.
- ALL SLOTTED CHANNEL, STRUT, WASHERS, SCREWS, NUTS, CONDUIT CLAMPS, ALL THREAD SPRING NUTS, AND MISCELLANEOUS MOUNTING HARDWARE SHALL BE 316 S.S.
- LIGHTING FIXTURES SHALL BE MOUNTED ACCORDING TO THE MOUNTING HEIGHT GIVEN ON THE DRAWINGS. THE MOUNTING HEIGHT SHALL BE MEASURED FROM THE BOTTOM OF THE LIGHTING FIXTURE TO FINISHED FLOOR.
- ALL CONDUITS AND WIRES SHOWN ON THE CONSTRUCTION DRAWINGS SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR. GROUPING OF CONDUIT AND WIRE MAY BE MODIFIED IF APPROVED BY OWNER AND ENGINEER.
- ALL CONDULETS SHALL HAVE 316 S.S. CLAMP COVERS WITH 316 S.S. CLAMPS AND SCREWS. SCREW DOWN COVERS ARE UNACCEPTABLE.
- ALL BARE COPPER GROUNDING CONDUCTORS SHALL BE TINNED. ALL GROUND RODS SHALL BE COPPER CLAD STEEL 3/4 IN. BY 10 FT. LONG. ALL EXPOSED COPPER GROUND CABLES SHALL BE GREEN INSULATED CONDUCTORS. PROVIDE XHHW-2 INSULATION.
- WHERE NOTES ON THE DRAWINGS INDICATED THAT THE CONTRACTOR SHALL FIELD-VERIFY, THE INTENT IS FOR THE CONTRACTOR TO INVESTIGATE TO THE EXTEND NECESSARY TO PROVIDE THE WORK AND MATERIALS PRIOR TO BIDDING AND INCLUDE ALL COSTS IN THE BID PRICE.
- SHOULD THE CONTRACTOR NOT INVESTIGATE PER REQUIREMENTS, CONTRACT PRICE SHALL NOT BE INCREASED. ALL REQUIRED CHANGES ARE SOLE RESPONSIBILITY OF CONTRACTOR AT NO ADDITIONAL COST TO OWNER.
- DIAGRAMS, SCHEMATICS, AND DETAILS ARE SHOWN ONLY TO ILLUSTRATE FUNCTIONAL RELATIONSHIPS BETWEEN COMPONENTS OF THE SYSTEM. CONTRACTOR SHALL SUBMIT EQUIPMENT, PRODUCT DATA, AND SHOP DRAWINGS INDICATING ACTUAL INSTALLATION METHODS AND EQUIPMENT TO BE INSTALLED. EQUIPMENT SHALL NOT BE INSTALLED UNTIL THE ENGINEER OF RECORD HAS REVIEWED SUBMITTAL AND TAKEN NO EXCEPTION OR GIVEN A CONDITIONAL ACCEPTANCE.
- HANDLE, STORE, AND PROTECT EQUIPMENT AND MATERIALS TO PREVENT DAMAGE BEFORE AND DURING INSTALLATION IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION. REPLACE DAMAGED OR DEFECTIVE ITEMS.
- COORDINATE WORK WITH ALL OTHER TRADES. MAINTAIN CLEARANCES AND ADVISE OTHER TRADES OF CLEARANCE REQUIREMENTS FOR OPERATION, REPAIR, REMOVAL, AND TESTING OF EQUIPMENT.
- DRAWINGS SHALL NOT BE SCALED FOR CONSTRUCTION INSTALLATION DIMENSIONS. EACH TRADE IS RESPONSIBLE FOR FIELD VERIFICATION OF DIMENSIONS AND SHALL PERFORM FIELD MEASUREMENTS PRIOR TO FABRICATION AND/OR PURCHASE OF ANY CABLES, EQUIPMENT AND MATERIAL. REPORT ANY ROUTING DISCREPANCIES IN WRITING TO ENGINEER OF RECORD.
- ELECTRICAL CONTRACTOR SHALL HAVE A MASTER ELECTRICIAN ON STAFF, AND LICENSED FOR THE STATE IN WHICH THIS PROJECT IS LOCATED. AN ELECTRICIAN MUST BE PRESENT AT ALL TIMES DURING THE INSTALLATION AND ENERGIZING OF THE SYSTEM.
- ALL MATERIALS AND DEVICES SHALL BE UL LISTED.
- PROVIDE EQUIPMENT IDENTIFICATION LABELS FOR ALL MAJOR PIECES OF EQUIPMENT INCLUDING CABINETS, ENCLOSURES, MANHOLES AND PULLBOXES, UNLESS UNITS ARE SPECIFIED WITH THEIR OWN IDENTIFICATION WITHIN PLANS. SECURE ALL NAMEPLATE TO EQUIPMENT USING 316 SS SELF-TAPPING SCREWS. PROVIDE A NAMEPLATE SCHEDULE FOR ENGINEER AND REVIEW PRIOR TO FABRICATION. REFER TO SPECIFICATIONS FOR ADDITIONAL DETAIL.
- ALL ABOVE GROUND CONDUIT INCLUDING ALL UNDERGROUND RISERS AND VERTICAL BENDS SHALL BE RIGID ALUMINUM. EMBEDDED PVC COATED RIGID ALUMINUM CONDUIT SHALL EXTEND A MINIMUM OF 18 IN. INTO CONCRETE BEFORE CONVERSION TO PVC.
- CONTRACTOR IS ADVISED TO READ ALL ELECTRICAL RELATED SPECIFICATION SECTIONS PRIOR TO BIDDING AND CONSTRUCTION. SEE SPECIFICATIONS FOR LIST OF PRE-QUALIFIED ELECTRICAL CONTRACTORS AND PANEL FABRICATORS.
- CIVIL, STRUCTURAL, ARCHITECTURAL, AND MECHANICAL PLANS MAY CONTAIN CRITICAL INFORMATION RELEVANT TO ELECTRICAL WORK AND SHOULD BE REVIEWED PRIOR TO BIDDING AND CONSTRUCTION.
- CONDUIT RUNS INSTALLED BELOW-GRADE IN EARTH SHALL BE SCH 80 PVC. USE MANUFACTURER'S APPROVED CEMENT FOR JOINING COUPLINGS AND ADAPTERS. RUNS SHALL BE INSTALLED SO THAT THE TOP OF CONCRETE DUCTBANK IS A MINIMUM OF TWENTY FOUR INCHES (24 IN.) BELOW FINISHED GRADE. SUPPORT CONDUIT RUNS ON PLASTIC SPACERS AND ENCASE CONDUITS WITH 3,000 PSI REINFORCED CONCRETE DYED WITH RED CONCRETE DYE AT A RATE OF 12 POUNDS OF DYE PER CUBIC YARD OF CONCRETE. PROVIDE CLEARANCES AS SHOWN ON DETAIL DRAWINGS. COVER TOP OF CONCRETE TO FINISHED GRADE WITH SELECTED SOIL THAT IS FREE FROM CLODS, DEBRIS, ROCKS, AND THE LIKE. PNEUMATICALLY TAMP BACKFILL IN SIX INCHES (6 IN.) TO EIGHT INCHES (8 IN.) BELOW FINISHED GRADE. INSTALL CONTINUOUS RUN OF "BURIED ELECTRIC" MARKING TAPE AND COMPLETE BACKFILL TO FINISHED GRADE. CONTRACTOR'S MEAN AND METHODS SHALL PREVENT FLOATING OF CONDUIT AND REBAR DURING CONCRETE PLACEMENT. METAL TO METAL CONTACT BETWEEN THE EARTH AND REBAR CAGE IS NOT ALLOWED.

No.	REVISIONS	DATE	BY



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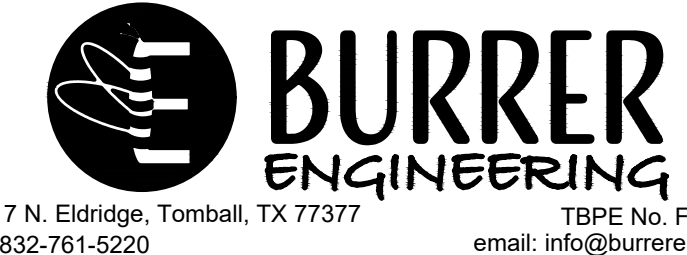


KHA PROJECT	067785106
DATE	December 2024
SCALE	N/A
DESIGNED BY:	SM
DRAWN BY:	TA
CHECKED BY:	EB

**CITY OF GALVESTON  
UTMB EST  
REHABILITATION**

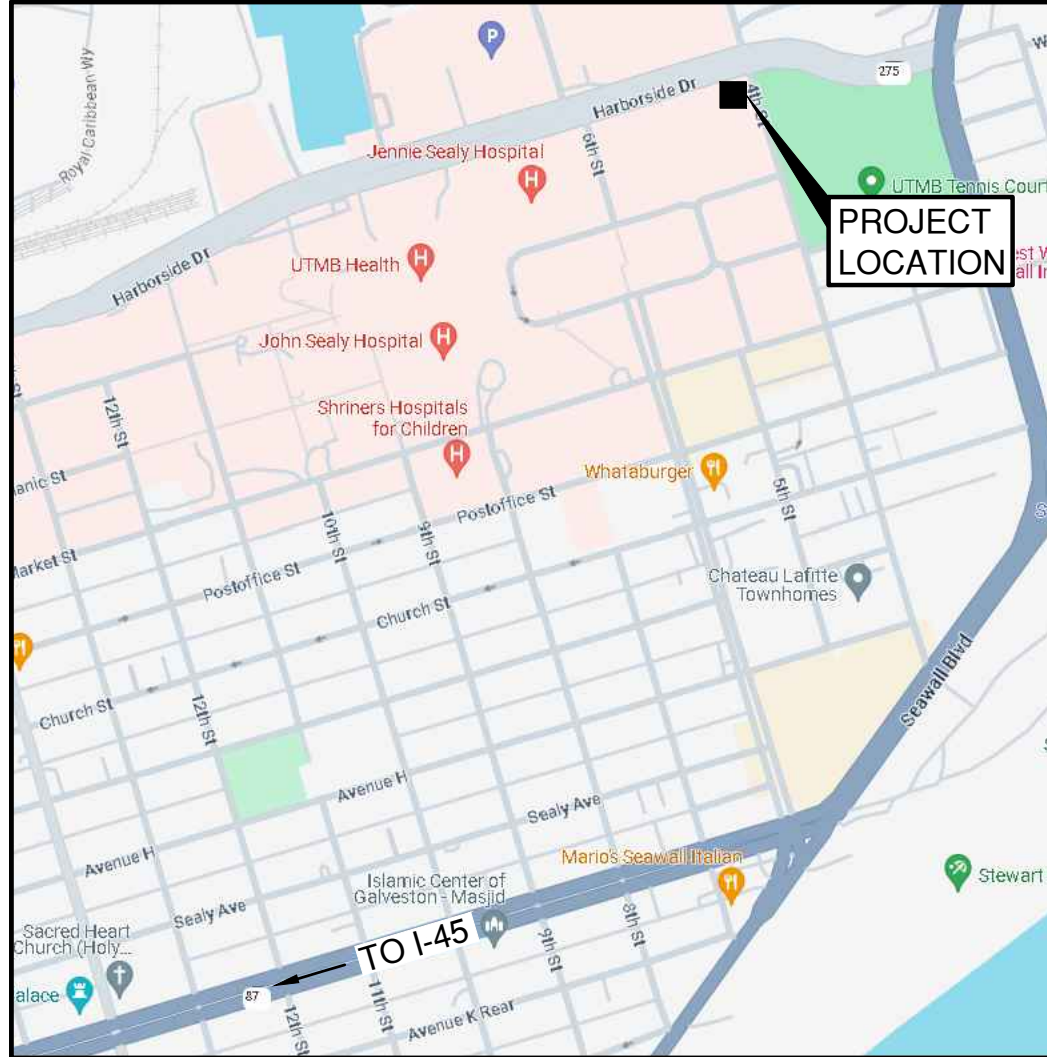
**ELECTRICAL  
GENERAL NOTES**

SHEET NUMBER  
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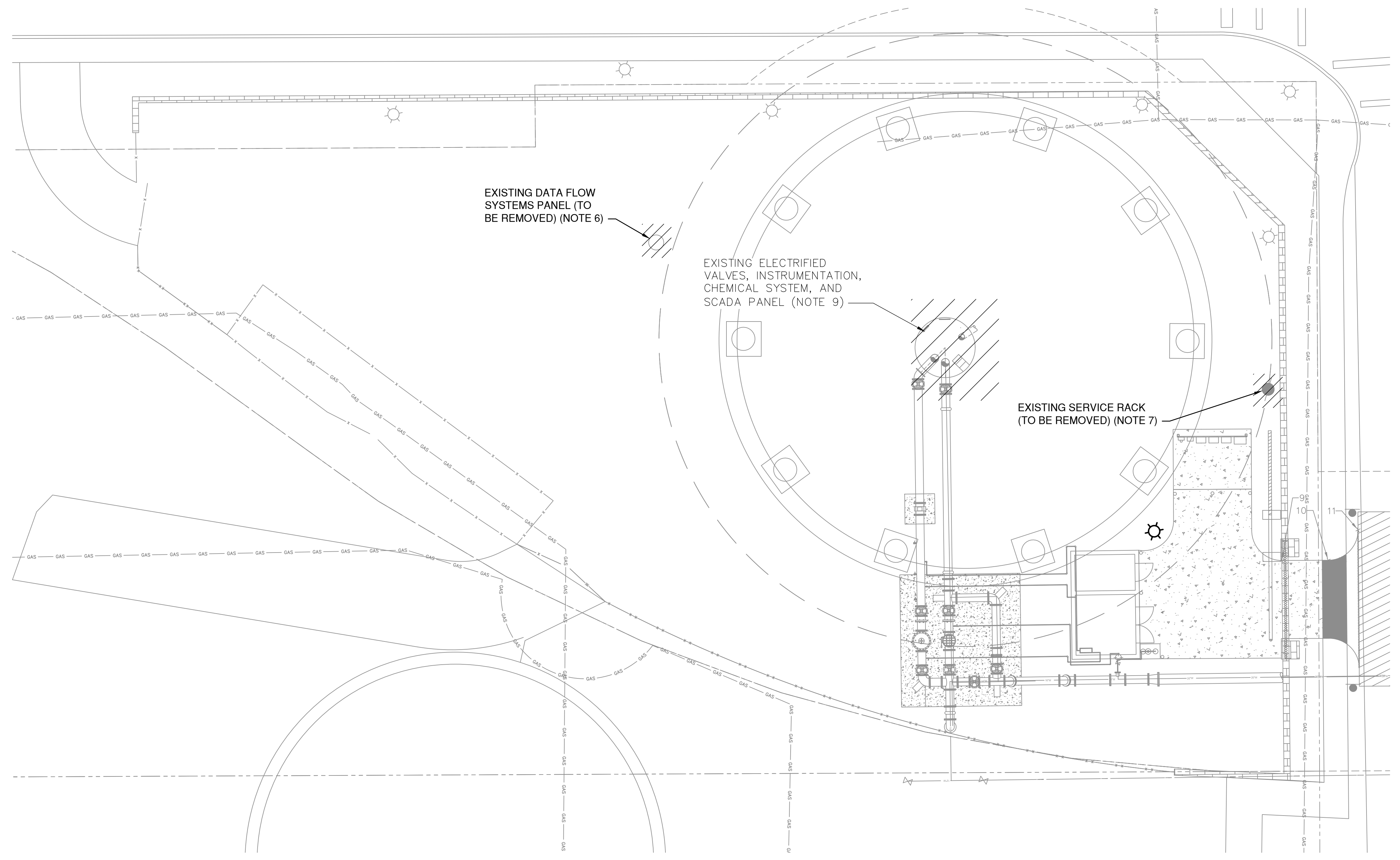
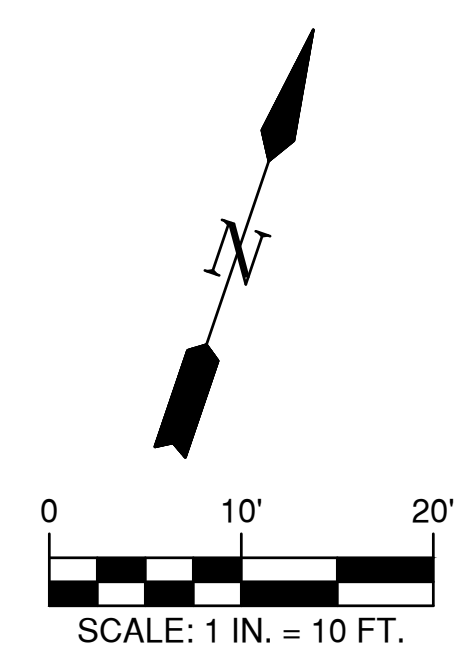
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VICINITY MAP

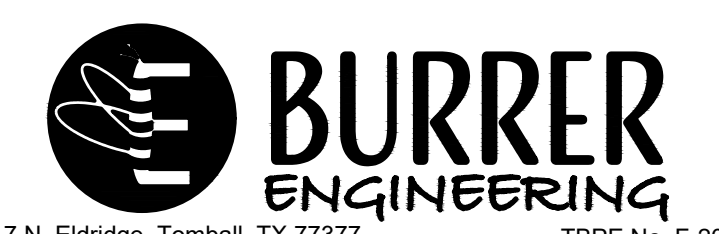
**PROJECT ADDRESS**  
 301 UNIVERSITY BLVD.  
 GALVESTON, TX 77555



**NOTES:**

1. REFER TO ELECTRICAL DEMOLITION SPECIFICATION FOR ADDITIONAL REQUIREMENTS.
2. REMOVE ALL ABANDONED CONDUITS. CUT OFF BELOW TOP OF SLAB. PLUG CONDUITS AND REPAIR FLOOR TO ORIGINAL FINISH.
3. REMOVE CONDUITS, CLAMPS, STRUTS, AND EQUIPMENT FROM SITE WHERE SHOWN. SEAL ALL WALL PENETRATIONS WITH LIQUID TIGHT GROUT AND REPAINT TO MATCH EXISTING COLOR.
4. REFER TO CIVIL, AND/OR STRUCTURAL PLANS FOR ADDITIONAL MODIFICATIONS.
5. LOCATE ALL UNDERGROUND CONDUITS, PIPING, AND OTHER STRUCTURES BEFORE STARTING WORK.
6. TURN OVER DATA FLOW SYSTEM EQUIPMENT TO CITY OF GALVESTON.
7. COORDINATE WITH UTILITY FOR DISCONNECTION, REPLACEMENT OF ELECTRICAL SERVICE EQUIPMENT WITH NEW AND RECONNECTION WITH UTILITY. REFER TO UTILITY ALLOWANCE IN BID SHEET.
8. DEMOLISH ALL EXISTING CHEMICAL, CONTROLS, ELECTRIFIED VALVES AS SPECIFIED BY CIVIL DRAWINGS. COORDINATE WITH OPERATIONS FOR OUTAGE OF ELEVATED TANK DURING CONSTRUCTION.
9. CHEMICAL PANEL TO BE RELOCATED, SCADA PANEL TO BE RELOCATED AS NOTED, AND ALL INSTRUMENTATION TO BE DEMOLISHED. REFER TO PROPOSED SHEETS.

**DEMOLITION SITE PLAN**  
 SCALE: 1 IN. = 10 FT.



17217 N. Eldridge, Tomball, TX 77377  
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KHA PROJECT 067785106	DATE August, 2025	SCALE: AS NOTED DESIGNED BY: SM DRAWN BY: TA CHECKED BY: EB		<p>STATE OF TEXAS REGISTRATION NO. F-928                  11700 KATY FREEMAN SUITE 800 HOUSTON, TX 77079                  WWW.KIMLEY-HORN.COM                  © 2024 KIMLEY-HORN AND ASSOCIATES, INC.</p>
	CITY OF GALVESTON UTMB EST REHABILITATION			
DEMOLITION SITE PLAN			SHEET NUMBER E-101	
REVISIONS		No. DATE BY		

**GENERAL NOTES:**

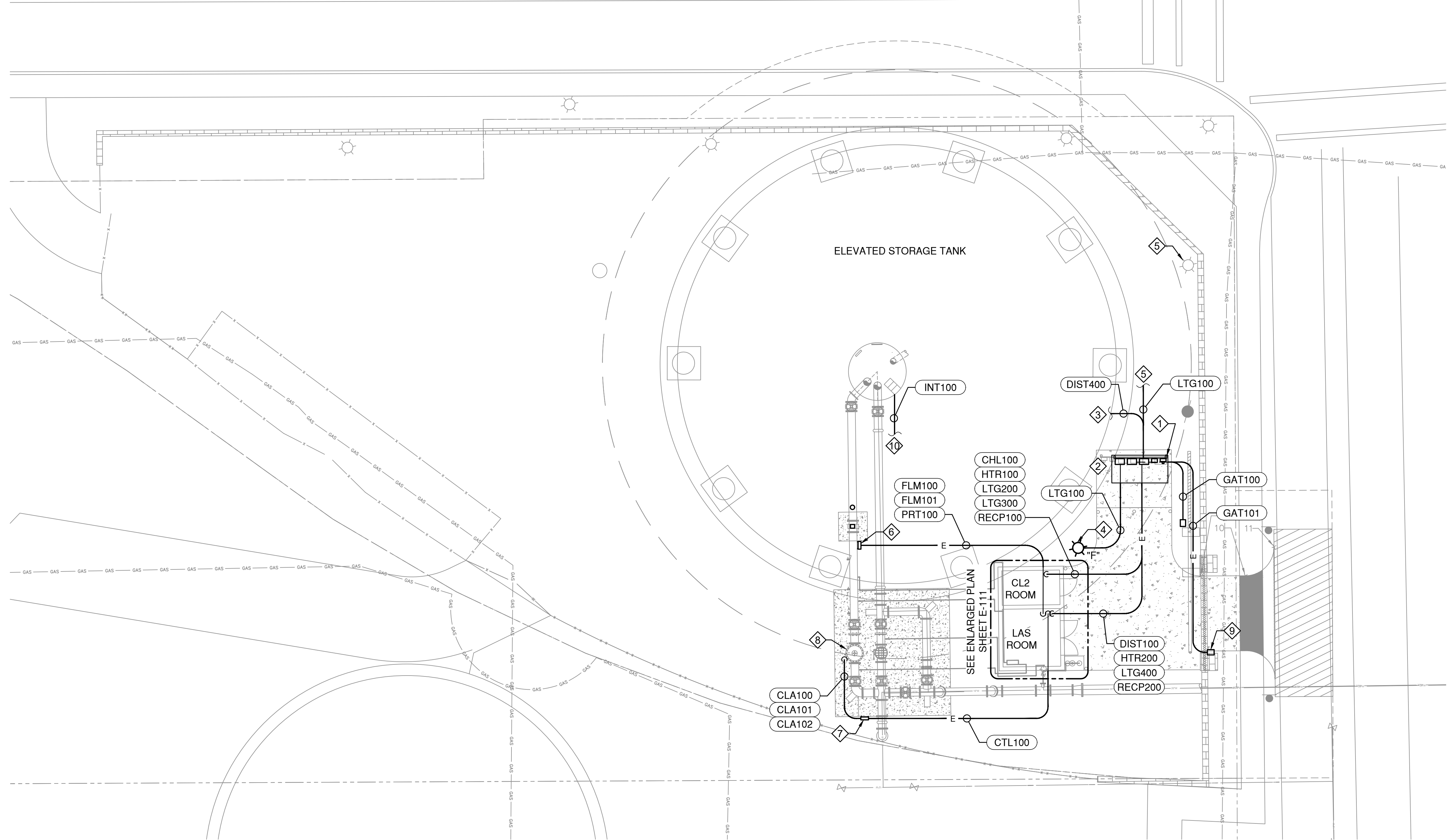
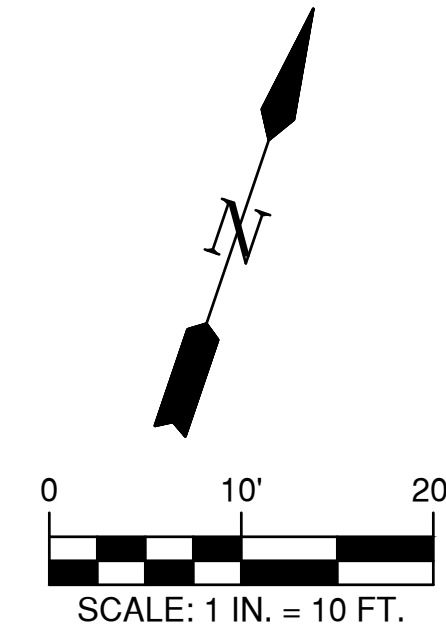
1. REFER TO CONDUIT SCHEDULE FOR FULL CONDUIT AND CABLE REQUIREMENTS.
2. COORDINATE ELECTRICAL SERVICE WITH LOCAL POWER COMPANY. ALL COORDINATION IS WITHIN SCOPE OF THIS CONTRACT AT NO ADDITIONAL COST TO OWNER. PROVIDE ADEQUATE SIZED TRANSFORMERS PER POWER COMPANY STANDARDS.
3. DO NOT INSTALL CONCRETE FOR EQUIPMENT OR DUCTBANK OVER WATER OR SEWER LINES. FIELD VERIFY AND MARK ALL UNDERGROUND LINES.
4. EQUIPMENT SHOWN MAY NOT TO BE SCALE. REFER TO ALL EQUIPMENT SUBMITTAL SHEETS AND ELECTRICAL DETAILS FOR ADDITIONAL INFORMATION. REFER TO CIVIL DRAWINGS FOR SITE DIMENSIONS.

5. PROVIDE GROUND CONNECTION AT SERVICE, PANELS, METALLIC EQUIPMENT AT RACK, PIPING, AND ALL METALLIC PARTS WITHIN PROJECT SITE.
6. ALL ELECTRICAL EQUIPMENT CONCRETE FOUNDATIONS ARE TO BE INSTALLED ABOVE FINISHED GRADE. ADDITIONAL ELEVATION DUE TO FLOOD PLAIN REQUIREMENTS ARE NOT SHOWN. REFER TO CIVIL SHEETS FOR FLOOD PLAIN LEVEL AND MINIMUM FOUNDATION HEIGHT REQUIREMENTS.

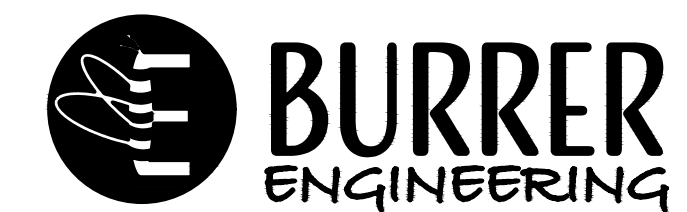
**KEYED NOTES:**

1. PROVIDE NEW TERMINAL POLE. COORDINATE FINAL LOCATION OF SERVICE DROP WITH POWER COMPANY PRIOR TO INSTALLATION. PROVIDE NEW CONDUIT AND WEATHERHEAD MOUNTED ON NEW TERMINAL POLE PER POWER COMPANY STANDARDS. SERVICE LATERAL PROVIDED BY CONTRACTOR WITH FINAL CONNECTIONS MADE BY POWER COMPANY. CONTRACTOR IS RESPONSIBLE FOR ALL COORDINATION WITH POWER COMPANY.
2. NEW EQUIPMENT RACK. REFER TO DETAIL FOR RACK ELEVATION.
3. INTERCEPT AND EXTEND CONDUIT SERVING EST PANELBOARD LOCATED IN PEDESTAL. PULL NEW FEED AND RECONNECT PANELBOARD.
4. RELOCATE EXISTING LIGHT FIXTURE ADJACENT TO SLIDING GATE. PROVIDE NEW FIXTURE BASE PER DETAILS. PULL NEW WIRING BACK TO NEW LIGHTING CONTROL PANEL AS REQUIRED.

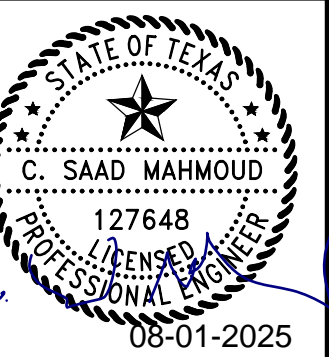
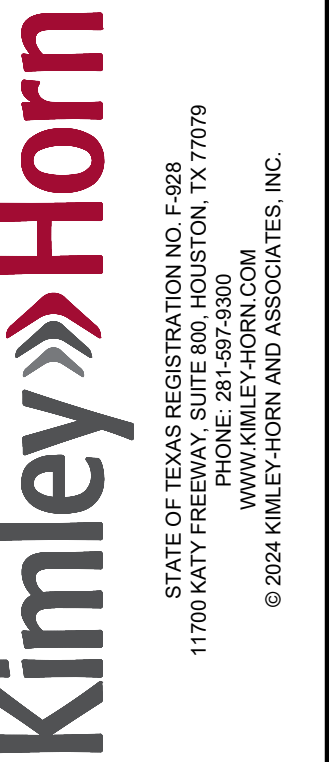
5. REFEEED EXISTING AREA LIGHT FIXTURES FROM NEW LIGHTING CONTROL PANEL AS REQUIRED.
6. PROVIDE INSTRUMENT TERMINAL BOX FOR NEW MAGNETIC FLOW METER AND PRESSURE TRANSMITTER. ROUTE BACK TO CHEMICAL CONTROL (SCADA) PANEL.
7. PROVIDE INSTRUMENT TERMINAL BOX FOR RELOCATED CLA-VALVE CONTROLS AND EST OVERFLOW PROXIMITY SWITCH, AND HEAT TRACE THERMOSTATIC CONTROLLER FOR CLA-VALVE ACCESSORIES. ROUTE BACK TO CHEMICAL CONTROL (SCADA) PANEL.
8. PROVIDE THERMOSTATICALLY CONTROLLED HEAT TRACE FOR AND INSULATION FOR CLA-VALVE PIPING ACCESSORIES.
9. NEW GATE ENTRY KEYPAD COORDINATE FINAL MOUNTING LOCATION WITH OWNER PRIOR TO INSTALLATION.
10. EST INTRUSION ALARM. ROUTE TO CHEMICAL CONTROL (SCADA) PANEL.



**ELECTRICAL SITE PLAN**  
SCALE: 1 IN. = 10 FT.



17217 N. Eldridge, Tomball, TX 77377  
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KHA PROJECT	067785106
DATE	August, 2025
SCALE:	AS NOTED
DESIGNED BY:	SM
DRAWN BY:	TA
CHECKED BY:	EB

**CITY OF GALVESTON**  
**UTMB EST**  
**REHABILITATION**

**ELECTRICAL**  
**SITE PLAN**

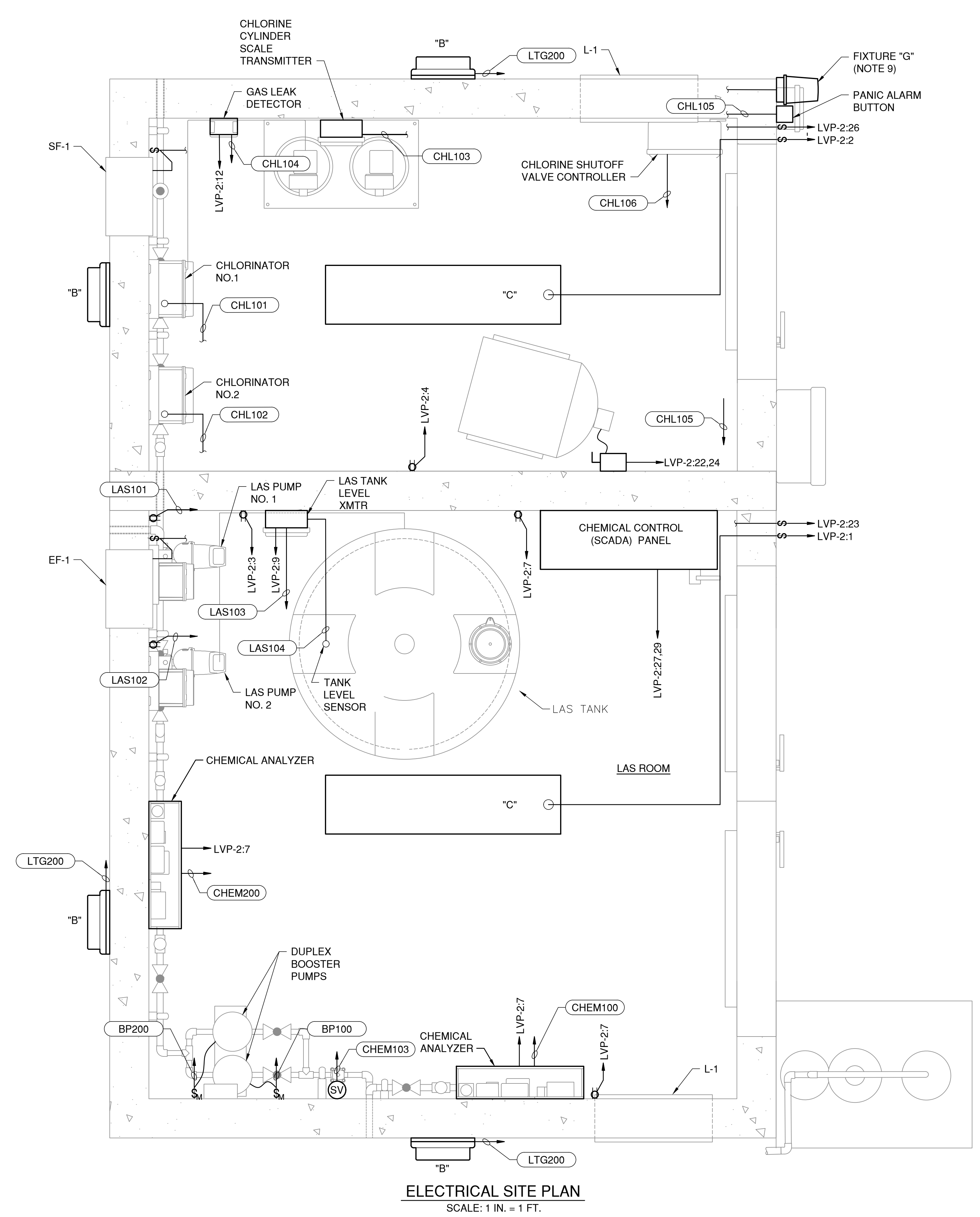
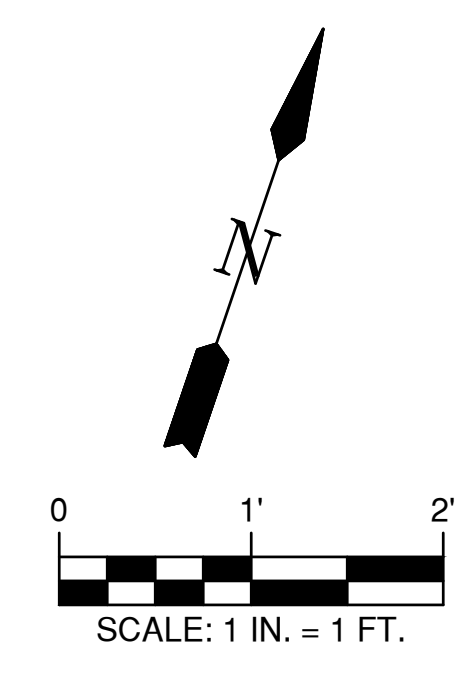
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**ELECTRICAL SITE PLAN**  
SCALE: 1 IN. = 1 FT.

**GENERAL NOTES:**

1. GENERAL CONTRACTOR TO PROVIDE EMERGENCY EGRESS PUSH BAR TO OPEN DOORS TO CHEMICAL ROOM. DOORS TO SWING OUTWARD FROM ROOM.
2. SHOW EXACT CIRCUIT DESCRIPTION ON PANEL LEGENDS AND INCLUDE IN O&M MANUALS AND AS-BUILTS.
3. ALL WIRING IN CHEMICAL ROOMS TO BE INSTALLED IN EXPOSED RIGID PVC SCHEDULE 80 CONDUIT AND BOXES WITH CODE SIZED GREEN GROUND WIRE PULLED BACK TO LIGHTING OR CONTROL PANELS FROM EACH DEVICE. SEAL ALL CONDUITS ENTERING ROOMS WITH EYS BODIES.
4. UNIT HEATER, WALL MOUNT BRACKET AND WALL MOUNTED LINE VOLTAGE CONTROL THERMOSTAT, 240 VOLT, SINGLE PHASE, FAN AND ADJUSTABLE OUTLET LOUVERS. SET CONTROLS AT 6 FT. - 6 IN. ABOVE FINISHED FLOOR.
5. PROVIDE CHEMICAL LEAK DETECTOR CONTACTS FOR SIGNAL TO AUTODIALER AND ALARM STROBE. INSTALL SENSORS PER MANUFACTURER'S INSTRUCTIONS.
6. REFER TO CIVIL/STRUCTURAL PLANS FOR EXACT SUPPLY FAN AND EXHAUST LOUVER MOUNTING HEIGHTS HEIGHT REQUIREMENTS. MOUNT LOCAL DISCONNECTING MEANS AT 6 FT. 6 IN. A.F.F.
7. TIE CHEMICAL FEED PUMPS TO CONTROL RELAY SYSTEM. CHEMICAL PUMP RECEPTACLES SHALL BE ENERGIZED WHEN CLA-VALVE FLOW CONTROL IS IN OPEN POSITION.
8. MECHANICAL EQUIPMENT TO BE POWERED BY LVP AND CONTROLLED VIA SWITCH OUTSIDE OF CHEMICAL ROOM.
9. SOLENOID VALVE SHALL CLOSE TO PREVENT CHEMICALS FROM ENTERING EST WHEN CLA VALVE IS CLOSED.
10. CHEMICALS WILL BE FLOW PACED BASED ON FLOW METER DATA SENT TO CHEMICAL CONTROL PANEL.
11. PROVIDE HEAVY DUTY MOTOR RATED SWITCH FOR BOOSTER PUMP LOCAL DISCONNECTING MEANS MOUNTED A MINIMUM OF 4 FT. 4 IN. A.F.F.
12. PROVIDE THERMOSTATICALLY CONTROLLED HEAT TRACE ON PIPING LESS THAN 1 IN. IN DIAMETER IN LAS ROOM.

No.	REVISIONS	DATE	BY

08-01-2025

KHA PROJECT	067785106	DATE	August, 2025	SCALE: AS NOTED
DESIGNED BY:	SM	DRAWN BY:	TA	CHECKED BY:

**CITY OF GALVESTON**  
UTMB EST  
REHABILITATION

**ELECTRICAL ENLARGED PLAN**

SHEET NUMBER	E-111
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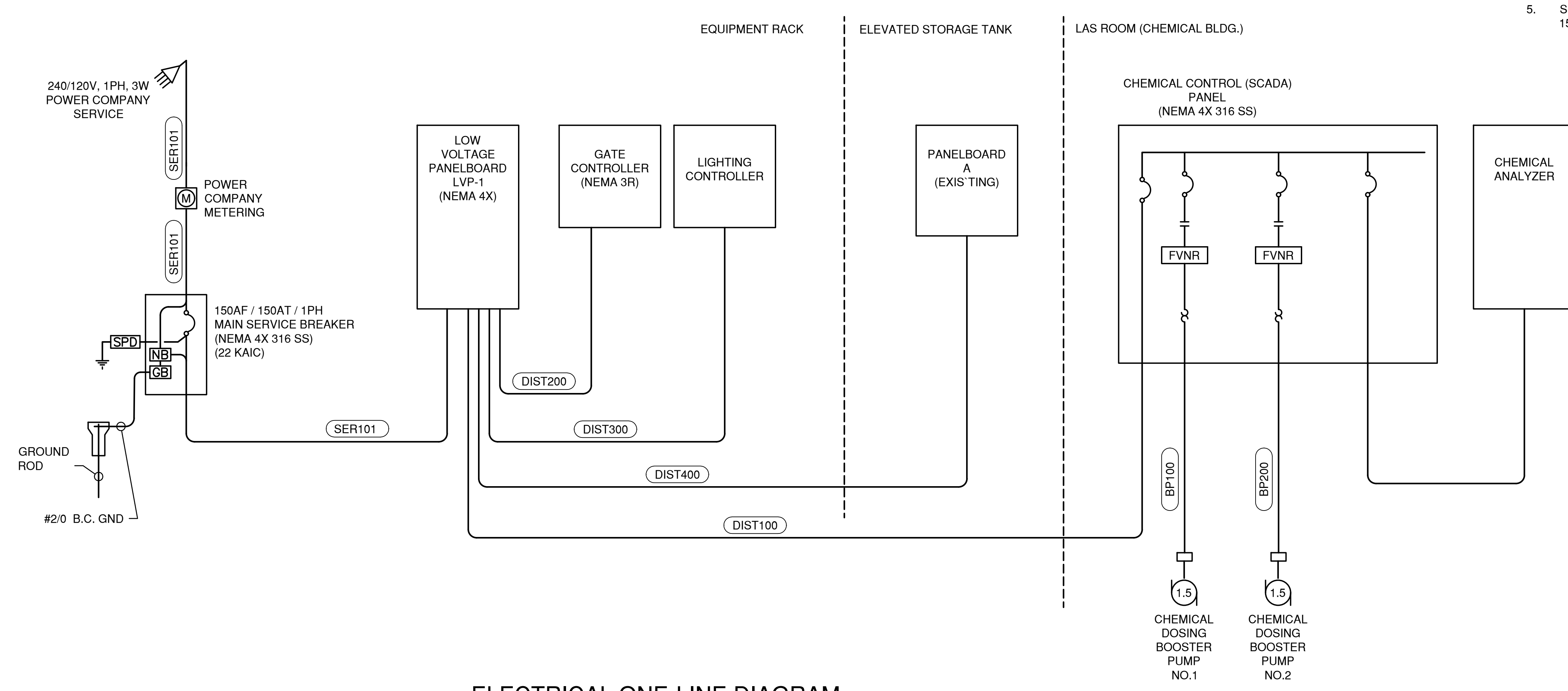
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 Filename: scada and lighting\cadd\201--2306 e--201 eaid.dwg



**ELECTRICAL ONE-LINE DIAGRAM**

- NOTES:**
- BALANCE ALL LOADS ON LOW VOLTAGE PANEL.
  - VERIFY BREAKER AND CONDUCTOR SIZE REQUIREMENTS WITH CATHODIC EQUIPMENT VENDOR.
  - CONTRACTOR SHALL VERIFY AVAILABLE FAULT CURRENT WITH POWER COMPANY AND PROVIDE EQUIPMENT RATED ACCORDINGLY.
  - PROVIDE AUXILIARY CONTACT FOR MONITORING CIRCUIT BREAKER STATUS. ROUTE TO SSC.
  - SHORT CIRCUIT CALCULATIONS WERE PERFORMED USING IEEE 1584-2018 STANDARDS.

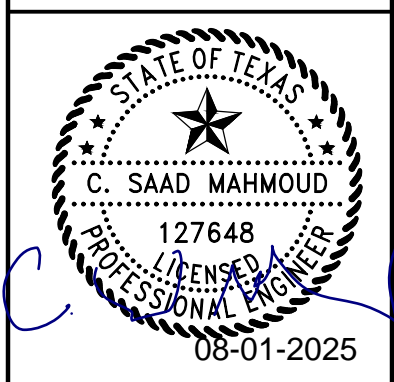
ELECTRICAL LOAD ANALYSIS					
LOAD	HP	KVA	AMPS		
			PH A	PH B	N
PANELBOARD "A"			80	80	80
TOTAL LOAD			80	80	80
SERVICE AMPACITY @ 120/240V, 1PH, 3W			100	100	100
SPARE AMPACITY			20	20	20

USE 42 KAIC RATED DEVICES AND BRACING

No.	REVISIONS	DATE	BY

**Kimley >>> Horn**

STATE OF TEXAS REGISTRATION NO. F-828  
 11700 KATY FREEMAN SUITE 800 HOUSTON, TX 77079  
 WWW.KIMLEY-HORN.COM  
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KHA PROJECT	067785106
DATE	July, 2025
SCALE	N/A
DESIGNED BY:	SM
DRAWN BY:	TA
CHECKED BY:	EB

**CITY OF GALVESTON  
 UTMB EST  
 REHABILITATION**

**ELECTRICAL  
 ONE-LINE DIAGRAM**

SHEET NUMBER  
**E-201**

**BURRER  
 ENGINEERING**


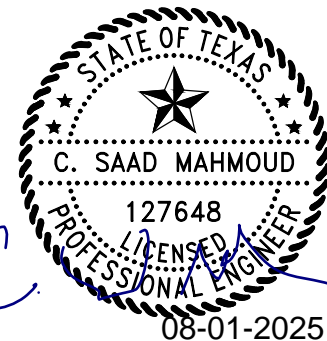
17217 N. Eldridge, Tomball, TX 77377  
 Tel: 832-761-5220  
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 Filename: scada and lighting\cadd\201--2306 e--301 esch1.dwg

**NOTE:**  
 1. ALL SERVICE AND MOTOR FEEDER CONDUCTORS TO BE XHHW-2. LOW VOLTAGE CONDUCTORS IN FEEDER CONDUIT TO BE 600V RATED.

CONDUIT SCHEDULE							
CONDUIT TAG	CONDUIT QUANTITY	CONDUIT SIZE	FROM	TO	CONDUCTOR (EACH CONDUIT)	CABLE TYPE	NOTES
BP100	1	1 IN.	CHEMICAL CONTROL (SCADA) PANEL	BOOSTER PUMP NO.1	2-#10 + #10 GND	XHHW-2	CHEMICAL BOOSTER PUMP NO.1 POWER
BP200	1	1 IN.	CHEMICAL CONTROL (SCADA) PANEL	BOOSTER PUMP NO.2	2-#10 + #10 GND	XHHW-2	CHEMICAL BOOSTER PUMP NO.2 POWER
CHEM100	1	1 IN.	CHEMICAL ANALYZER PANEL	CHEMICAL CONTROL (SCADA) PANEL	8-#14 + #14 GND 4- #14 TWISTED SHIELDED CABLE W/GND	XHHW-2	CHEMICAL ANALYZER ALARMS MONOCHLORINE, TOTAL CHLORINE, FREE AMMONIA, TOTAL AMMONIA
CHEM200	1	1 IN.	CHEMICAL ANALYZER PANEL	CHEMICAL CONTROL (SCADA) PANEL	8-#14 + #14 GND 4- #14 TWISTED SHIELDED CABLE W/GND	XHHW-2	CHEMICAL ANALYZER ALARMS MONOCHLORINE, TOTAL CHLORINE, FREE AMMONIA, TOTAL AMMONIA
CHL101	1	1 IN.	CHEMICAL CONTROL (SCADA) PANEL	CHLORINATOR NO.1	2-#12 + #12 GND 6-#14 + #14 GND 1 - #14 TWISTED SHIELDED CABLE W/GND	XHHW-2	CHLORINATOR POWER CHLORINATOR REMOTE START/STOP, FAULT CHLORINATOR FLOW RATE CONTROL
CHL102	1	1 IN.	CHEMICAL CONTROL (SCADA) PANEL	CHLORINATOR NO.2	2-#12 + #12 GND 6-#14 + #14 GND 1 - #14 TWISTED SHIELDED CABLE W/GND	XHHW-2	CHLORINATOR POWER CHLORINATOR REMOTE START/STOP, FAULT CHLORINATOR FLOW RATE CONTROL
CHL103	1	1 IN.	CHEMICAL CONTROL (SCADA) PANEL	CHLORINE TANK SCALE	2-#12 + #12 GND 2 - #14 TWISTED SHIELDED CABLE W/GND	XHHW-2	CHLORINE DUAL TANK SCALE POWER CHLORINE TANK 1 / TANK 2 WEIGHT
CHL104	1	1 IN.	CHEMICAL CONTROL (SCADA) PANEL	CHLORINE LEAK DETECTOR	4-#14 + #14 GND 1-#14 TWISTED SHIELDED CABLE W/GND	XHHW-2	CHLORINE LEAK ALARM CHLORINE LEAK CONCENTRATION
CHL105	1	1 IN.	CHEMICAL CONTROL (SCADA) PANEL	CHLORINE ROOM PANIC ALARM	2-#14 + #14 GND	XHHW-2	CHLORINE PANIC BUTTON CONTACT
CHL106	1	1 IN.	CHEMICAL CONTROL (SCADA) PANEL	CHLORINE SHUTOFF VALVE CONTROLLER	2-#12 + #12 GND	XHHW-2	CHLORINE SHUTOFF VALVE CONTROLLER POWER
CLA100	1	1 & 1/2 IN.	SCADA CONTROL PANEL	CLA VALVE	4-#14 + #14 GND	XHHW-2	CLA VALVE CONTROL SOLENOID OPEN/CLOSE
CLA101	1	1 IN.	PULLBOX NO.2	CLA VALVE	4-#14 + #14 GND	XHHW-2	CLA VALVE CONTROL SOLENOID OPEN/CLOSE
CLA102	1	1 IN.	PULLBOX NO.2	CLA VALVE	MANUFACTURER'S CABLE	-	HEAT TRACE FOR CLA VALVE ACCESSORIES. REFER TO MANUFACTURER'S RECOMMENDATION FOR HEAT TRACE WIRING.
CTL100	1	1 IN.	CHEMICAL CONTROL (SCADA) PANEL	PULLBOX NO.2	2-#12 + #12 GND 6-#14 + #14 GND	XHHW-2	HEAT TRACE CONTROLLER POWER SIGNAL WIRING: CLA100, CLA101, EST100
DIST100	1	1 IN.	PANELBOARD LVP-1	CHEMICAL CONTROL (SCADA) PANEL	3-#6 + #8 GND	XHHW-2	CHEMICAL CONTROL (SCADA) PANEL POWER
DIST200	1	3/4 IN.	PANELBOARD LVP-1	GATE CONTROL PANEL	3-#10 + #10 GND	XHHW-2	SLIDE GATE CONTROL PANEL
DIST300	1	3/4 IN.	PANELBOARD LVP-1	LIGHTING CONTROLLER	3-#10 + #10 GND	XHHW-2	LIGHTING CONTROLLER POWER
DIST400	1	1 IN.	PANELBOARD LVP-1	LOAD CENTER A(EXIST.)	3-#8 + #8 GND	XHHW-2	EXIST. PANELBOARD A POWER (MATCH EXISTING CONDUIT)
EST100	1	1 IN.	PULLBOX NO.2	EST OVERFLOW SWITCH	2-#14 + #14 GND	XHHW-2	OVERFLOW LIMIT SWITCH
FLM100	1	1 IN.	CHEMICAL CONTROL (SCADA) PANEL	FLOW METER (VIA PULLBOX NO.1)	2-#12 + #12 GND	XHHW-2	FLOW METER POWER
FLM101	1	1 IN.	CHEMICAL CONTROL (SCADA) PANEL	FLOW METER (VIA PULLBOX NO.1)	1 - #14 TWISTED SHIELDED CABLE W/GND	XHHW-2	FLOW METER ANALOG FLOW RATE
GAT100	1	1 IN.	GATE CONTROLLER	GATE MOTOR	3-#10 + 1-#10 GND	XHHW-2	AUTOMATIC GATE POWER
GAT101	1	1 IN.	GATE CONTROLLER	GATE CONTROL PAD	MANUFACTURER'S CABLE	-	AUTOMATIC GATE CONTROL PAD
HTR100	1	1 IN.	LOW VOLTAGE PANEL	CHLORINE ROOM HEATER	3-#10 + #12 GND	XHHW-2	CHLORINE ROOM HEATER
HTR200	1	1 IN.	LOW VOLTAGE PANEL	AMMONIA ROOM HEATER	3-#10 + #12 GND	XHHW-2	LAS ROOM HEATER (FUTURE)
INT100	1	1 IN.	SCADA CONTROL PANEL	EST ENTRY HATCH	6-#14 + #14 GND	XHHW-2	ENTRY HATCH INTRUSION SWITCH & FAA OBSTRUCTION LIGHT SIGNALS
LAS101	1	3/4 IN.	CHEMICAL CONTROL (SCADA) PANEL	LAS CHEMICAL PUMPS NO.1	2-#12 + #12 GND 6-#14 + #14 GND 1 - #14 TWISTED SHIELDED CABLE W/GND	XHHW-2	LAS POWER LAS REMOTE START/STOP, FAULT LAS FLOW RATE CONTROL
LAS102	1	3/4 IN.	CHEMICAL CONTROL (SCADA) PANEL	LAS CHEMICAL PUMP NO.2	2-#12 + #12 GND 6-#14 + #14 GND 1 - #14 TWISTED SHIELDED CABLE W/GND	XHHW-2	LAS POWER LAS REMOTE START/STOP, FAULT LAS FLOW RATE CONTROL
LAS103	1	3/4 IN.	CHEMICAL CONTROL (SCADA) PANEL	LAS LEVEL TRANSMITTER	4-#14 + #14 GND 1-#14 TWISTED SHIELDED CABLE W/GND	XHHW-2	LAS LEVEL TRANSMITTER FAULT, TANK LOW LEVEL ALARM, LAS LEVEL TRANSMITTER LEVEL
LAS104	1	3/4 IN.	LAS TANK LEVEL TRANSMITTER	LAS TANK LEVEL SENSOR	MANUFACTURER'S CABLE	-	TANK ULTRASONIC LEVEL SENSOR
LTG100	1	1 IN.	LIGHTING CONTROL PANEL	AREA LIGHTING (EXISTING POLES)	2-#10 + #10 GND	XHHW-2	REFEED SITE AREA LIGHTING (INTERCEPT AND EXTEND EXISTING CONDUIT TO NEW LIGHTING CONTROLLER AS REQUIRED)
LTG200	1	1 IN.	LIGHTING CONTROL PANEL	CHEMICAL BUILDING (EXTERIOR LIGHTING)	2-#10 + #10 GND	XHHW-2	CHLORINE ROOM LIGHTING
LTG300	1	1 IN.	LOW VOLTAGE PANEL	CHLORINE ROOM LIGHTING	2-#10 + #10 GND	XHHW-2	LAS ROOM LIGHTING
LTG400	1	1 & 1/2 IN.	LOW VOLTAGE PANEL	LAS ROOM LIGHTING	2-#10 + #10 GND	XHHW-2	AREA LIGHT
LTG500	1	1 IN.	PANELBOARD A(EXIST.)	FAA OBSTRUCTION LIGHT CONTROLLER	2-#10 + #10 GND	XHHW-2	FLIGHT OBSTRUCTION LIGHT CONTROL PANEL
OLF100	1	1 IN.	OBSTRUCTION LIGHT FAIL RELAY	SCADA PANEL	2-#14 + #14 GND	XHHW-2	OBSTRUCTION LIGHT FAILURE
PRT100	1	1 IN.	CHEMICAL CONTROL (SCADA) PANEL	PRESSURE TRANSDUCER	1 - #14 TWISTED SHIELDED CABLE W/GND	XHHW-2	PRESSURE SENSOR - ANALOG PRESSURE
RECP100	2	1 IN.	LOW VOLTAGE PANEL	CHLORINE ROOM	REFER TO PANELS SCHEDULES FOR QTYS.	XHHW-2	CONVENIENCE RECEPTACLES, EXHAUST FAN POWER, MISCELLANEOUS EQUIPMENT POWER NOT INCLUDED ELSEWHERE TO BE ROUTED THROUGH CONDUIT.
RECP200	2	1 IN.	LOW VOLTAGE PANEL	LAS ROOM	REFER TO PANELS SCHEDULES FOR QTYS.	XHHW-2	CONVENIENCE RECEPTACLES, EXHAUST FAN POWER, MISCELLANEOUS EQUIPMENT POWER NOT INCLUDED ELSEWHERE TO BE ROUTED THROUGH CONDUIT.
SCA100	1	1 & 1/2 IN.	SCADA PANEL	BOOSTER PUMP PANEL	8-#14 + #14 GND	XHHW-2	LAS BOOSTER PUMP CALL/ RUN/ FAIL
SER101	1	2 IN.	UTILITY	LOW VOLTAGE PANEL	3-#1/0 + #6 GND	XHHW-2	SERVICE LATERAL

REVISIONS	BY	
	DATE	
No.		
		
		
KHA PROJECT	DATE	SCALE
067785106	August, 2025	N/A
DESIGNED BY:	DRAWN BY:	CHECKED BY:
SM	TA	EB
<b>CITY OF GALVESTON</b> <b>UTMB EST</b> <b>REHABILITATION</b>		
<b>ELECTRICAL</b> <b>SCHEDULES SHEET 1</b>		
SHEET NUMBER		
E-301		

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 Filename: scada and lighting\cadd\201--2306 e--302 esch2.dwg

### LUMINAIRE FIXTURE SCHEDULE

SYMBOL	DESCRIPTION	VOLTAGE	LUMENS	WATTAGE	MOUNTING	MANUFACTURER	LUMINAIRE CATALOG NUMBER	POLE DATA
A1	LOW INTENSITY AIRCRAFT OBSTRUCTION LIGHT	120V	-	5.5	STANCHION	EATON	12004-RTO-CR27-002	PROVIDE ACCESSORIES REQUIRE TO MOUNT IN EXISTING LOCATION. PROVIDE NEW CONTROLLER PER DETAILS.
B	WALL PACK	120V	5,174	250	WALL	LITHONIA	TWP LED AL0 40K	HARDWARE, ANCHORS, AND HINGE PIN SHALL BE 316 S.S. SEAL PENETRATIONS WITH LIQUID TIGHT GROUT
C	STRIP LIGHT - NEMA 4X	120V	4000	40	CEILING	EATON - COOPER	MLL-4-/UNV1-P-MP1054MTK KIT-SS KIT	-
F	AREA LIGHT	120V	EXISTING	EXISTING	POLE	EXISTING	EXISTING FIXTURE (RELOCATED)	RELOCATE EXISTING FIXTURE (MATCH IF DAMAGED)
G	ALARM LIGHT	120V	-	-	PANEL	EDWARDS	125LEDFR120A-125	EST INTERIOR LIGHT

**NOTE:**

- ALL SERVICE AND MOTOR FEEDER CONDUCTORS TO BE XHHW-2. LOW VOLTAGE CONDUCTORS IN FEEDER CONDUIT TO BE 600V RATED.
- CONTRACTOR SHALL FIELD VERIFY EXISTING CIRCUITS IN PANELBOARD "A (EXIST.)" AND PROVIDE NEW CIRCUIT SCHEDULE TO REFLECT THE CONNECTED CIRCUITS IN THIS PANEL.

**PANEL LVP**      PHASE BUS RATING 150A      WIRE SIZE 3/0      WITH:  SOLID NEUTRAL & GROUND  
 SERVICE VOLTAGE 120/240V      NEUTRAL BUS RATING 150A      NEU WIRE SIZE 3/0       ISOLATED GROUND BUS  
 MAIN BREAKER SIZE 125A      SHORT CIRCUIT RATING 25 KAIC      PHASE 1       200% NEUTRAL  
 LOCATION EQUIPMENT RACK      MOUNTING SURFACE      NOTE: ADJ. CKTS. TO BAL. PNL.

CKT. DESCRIPTION	WIRE	BREAKER		VA/WATTS		CKT NO.	CKT NO.	VA/WATTS		BREAKER		WIRE	CKT. DESCRIPTION
		POLE	AMP	A	B			A	B	POLE	AMP		
LIGHTING - LAS ROOM	10	1	20	200		1	2	40		1	20	10	LIGHTING - CHLORINE RM.
CONV. RECEP.TS - LAS ROOM	10	1	20		540	3	4	180		1	20	10	CONV. RECEP.T. - CHLORINE RM.
HEATER - LAS ROOM (FUTURE)	10	2	30	2500		5	6	2500		2	30	10	HEATER - CHLORINE RM.
					2500	7	8		2500				
LAS TANK - LEVEL TRANSMITTER	10	1	20	180		9	10	-		1	20		SPARE
CHEMICAL ANALYZER (FILL LINE)	10	1	20		500	11	12	-		1	20		SPARE
CHEMICAL ANALYZER (DRAIN LINE)	10	1	20	500		13	14	250		2	30	10	LIGHTING CONTROLLER PANEL (EXTERIOR LIGHTING)
SPARE	12	1	20	-		15	16	300					
SPARE	12	1	20	-		17	18	-		1	20		SPARE
SPARE	12	1	20	-		19	20	1440		2	40		PANELBOARD "A(EXIST)"
SPARE	12	1	20	-		21	22	1080					
EXHAUST FAN - LAS ROOM	19	1	20		500	23	24			1	20		SPARE
SPARE	10	1	20	-		25	26	500		1	20	10	SUPPLY FAN (CHLORINE ROOM)
CHEMICAL CONTROL (SCADA) PANEL	6	1	50		3500	27	28		1320	2	20	12	SLIDE GATE CONTROLLER
						29	30	1320					
TOTAL PHASE A: 12570 VOLT-AMPS				PHASE A CURRENT: 105 AMPS				TOTAL CONNECTED LOAD: 25850 VA					
TOTAL PHASE B: 13280 VOLT-AMPS				PHASE B CURRENT: 111 AMPS									

**PANEL A (EXIST.)**      PHASE BUS RATING 100A      WIRE SIZE #6      WITH:  SOLID NEUTRAL & GROUND  
 SERVICE VOLTAGE 120/240V      NEUTRAL BUS RATING 100A      NEU WIRE SIZE #6       ISOLATED GROUND BUS  
 MAIN BREAKER SIZE MLO      SHORT CIRCUIT RATING 18 KAIC      PHASE 1       200% NEUTRAL  
 LOCATION EST PEDESTAL      MOUNTING SURFACE      NOTE: ADJ. CKTS. TO BAL. PNL.

CKT. DESCRIPTION	WIRE	BREAKER		VA/WATTS		CKT NO.	CKT NO.	VA/WATTS		BREAKER		WIRE	CKT. DESCRIPTION
		POLE	AMP	A	B			A	B	POLE	AMP		
EXISTING	10	1	20	360		1	2	360		1	20	10	EXISTING
EXISTING	10	1	20		360	3	4	360		1	20	10	EXISTING
EXISTING	12	1	20	360		5	6	360		1	20	12	EXISTING
EXISTING	12	1	20		360	7	8						SPACE
SPACE						9	10						SPACE
SPACE						11	12						SPACE
SPACE						13	14						SPACE
SPACE						15	16						SPACE
TOTAL PHASE A: 1440 VOLT-AMPS				PHASE A CURRENT: 12 AMPS				TOTAL CONNECTED LOAD: 2520 VA					
TOTAL PHASE B: 1080 VOLT-AMPS				PHASE B CURRENT: 9 AMPS									

NO.	REVISIONS	DATE	BY

STATE OF TEXAS REGISTRATION NO. F-628  
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KHA PROJECT	DATE	SCALE	DESIGNED BY:	DRAWN BY:	CHECKED BY:
067785106	August, 2025	N/A	SM	TA	EB

CITY OF GALVESTON  
 UTMB EST  
 REHABILITATION

ELECTRICAL  
 SCHEDULES SHEET 2

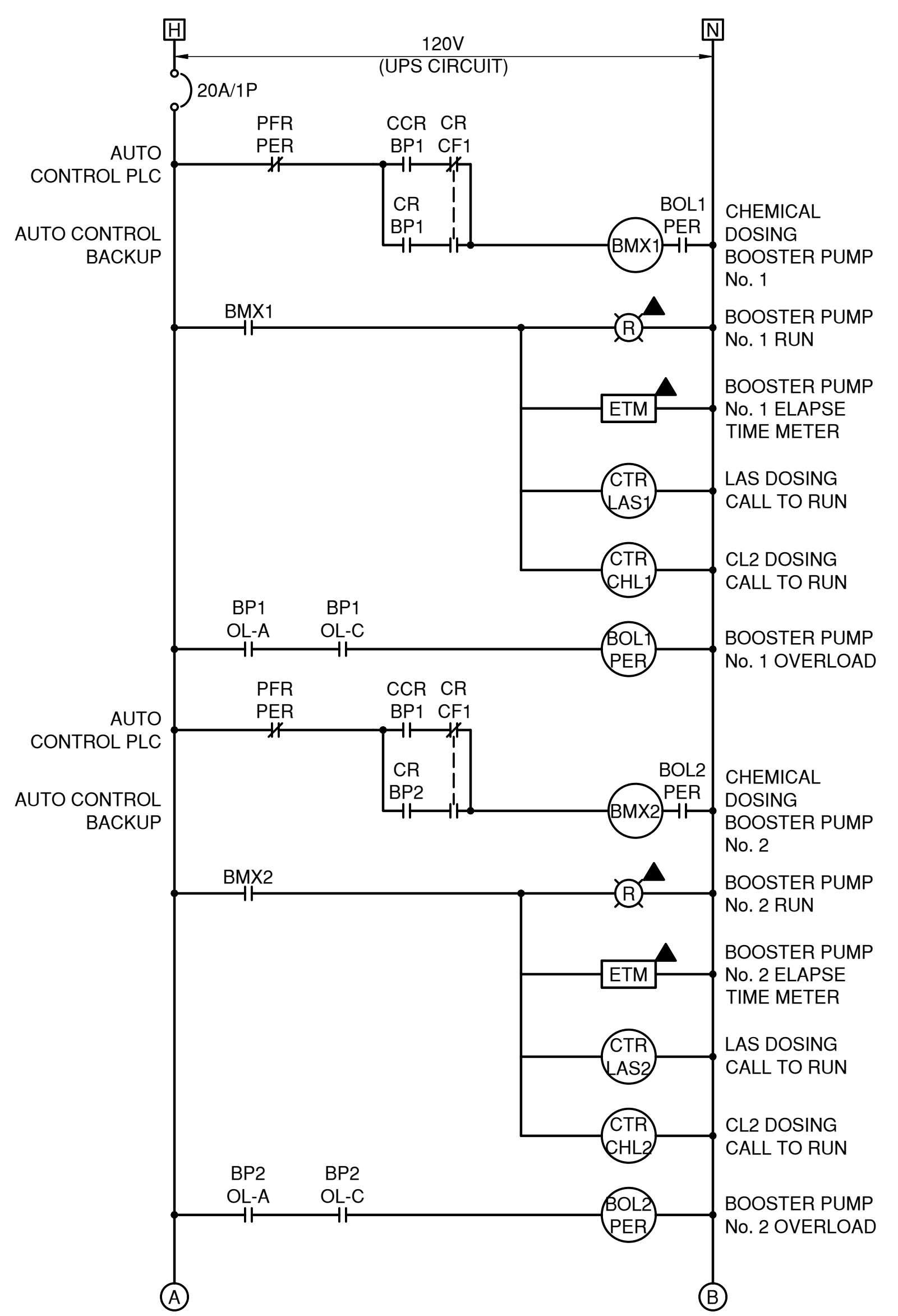
SHEET NUMBER  
**E-302**

Burrer  
ENGINEERING

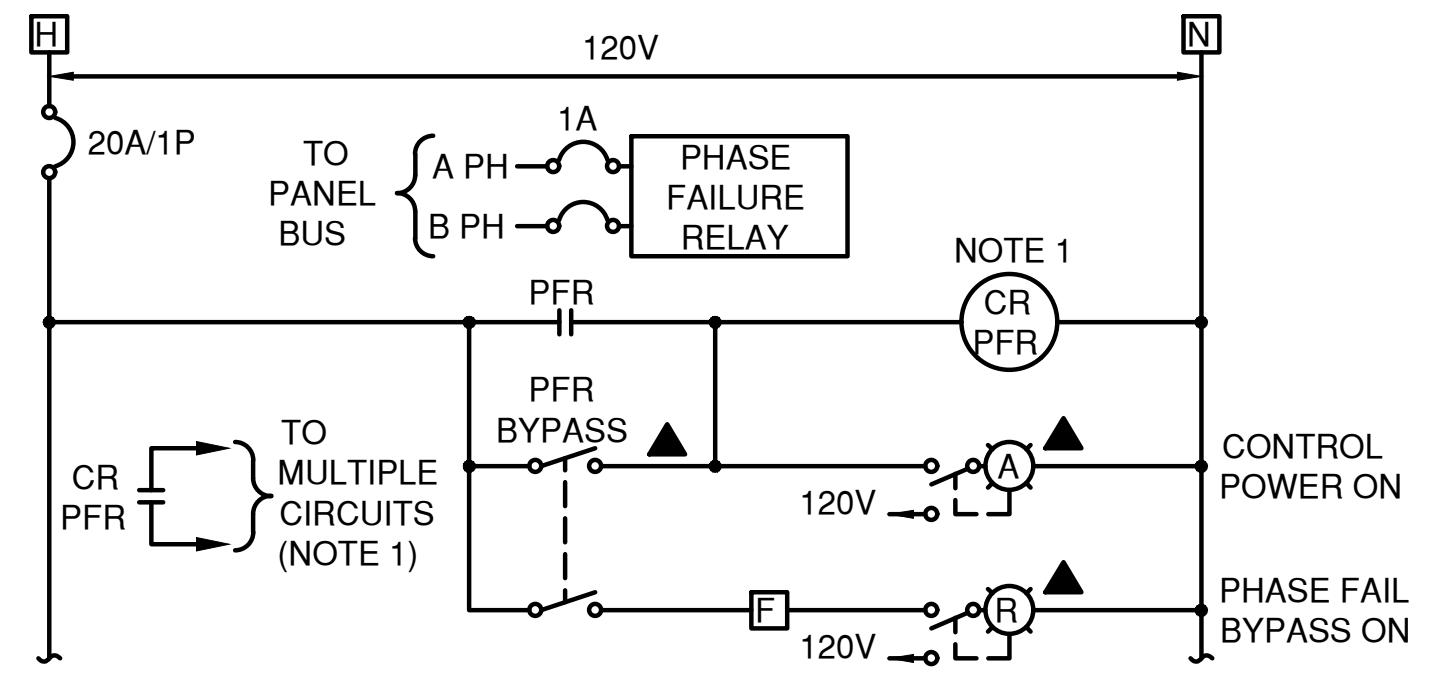
17217 N. Eldridge, Tomball, TX 77377      TBPE No. F-20420  
 Tel: 832-761-5220      email: info@burrereng.com

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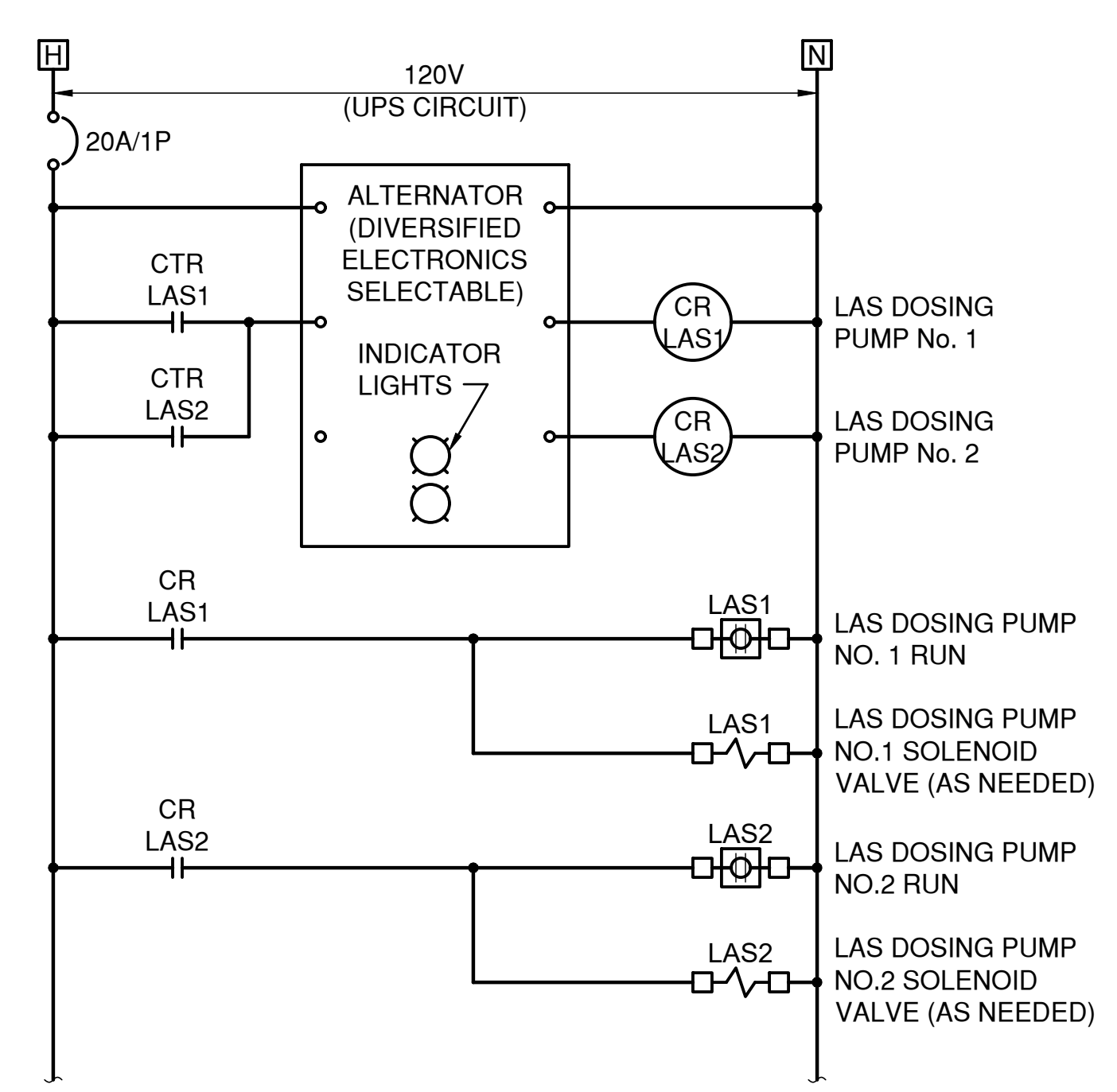


**BOOSTER PUMP CONTROL DIAGRAM**



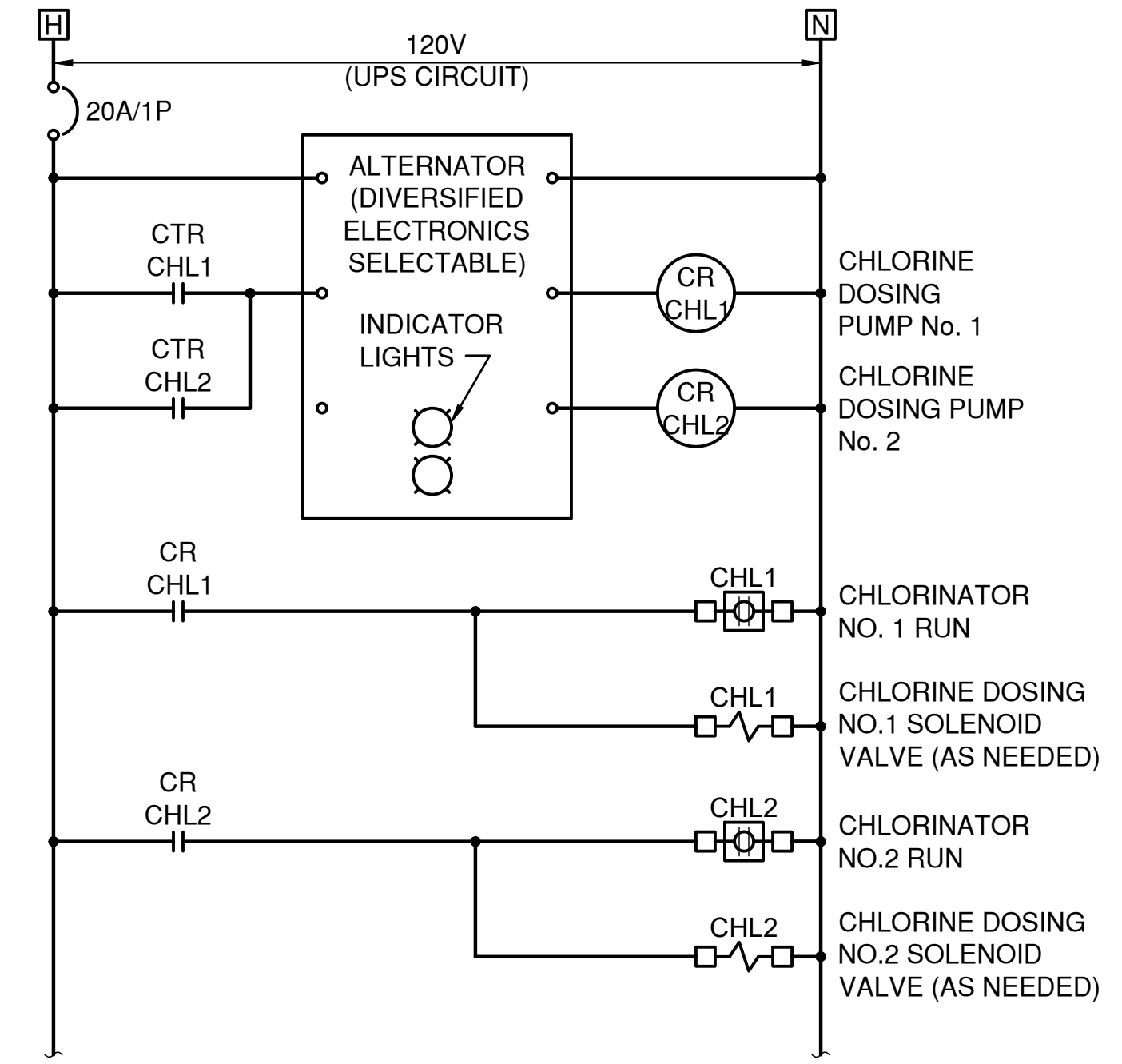
**NOTE:**  
 1. USE MULTIPLE RELAYS WHERE ADDITIONAL CONTROLS ARE REQUIRED.

**PHASE FAIL RELAY CONTROL DIAGRAM**



**NOTES:**  
 1. IN BACKUP MODE, DOSING SHALL BE PREPROGRAMMED.

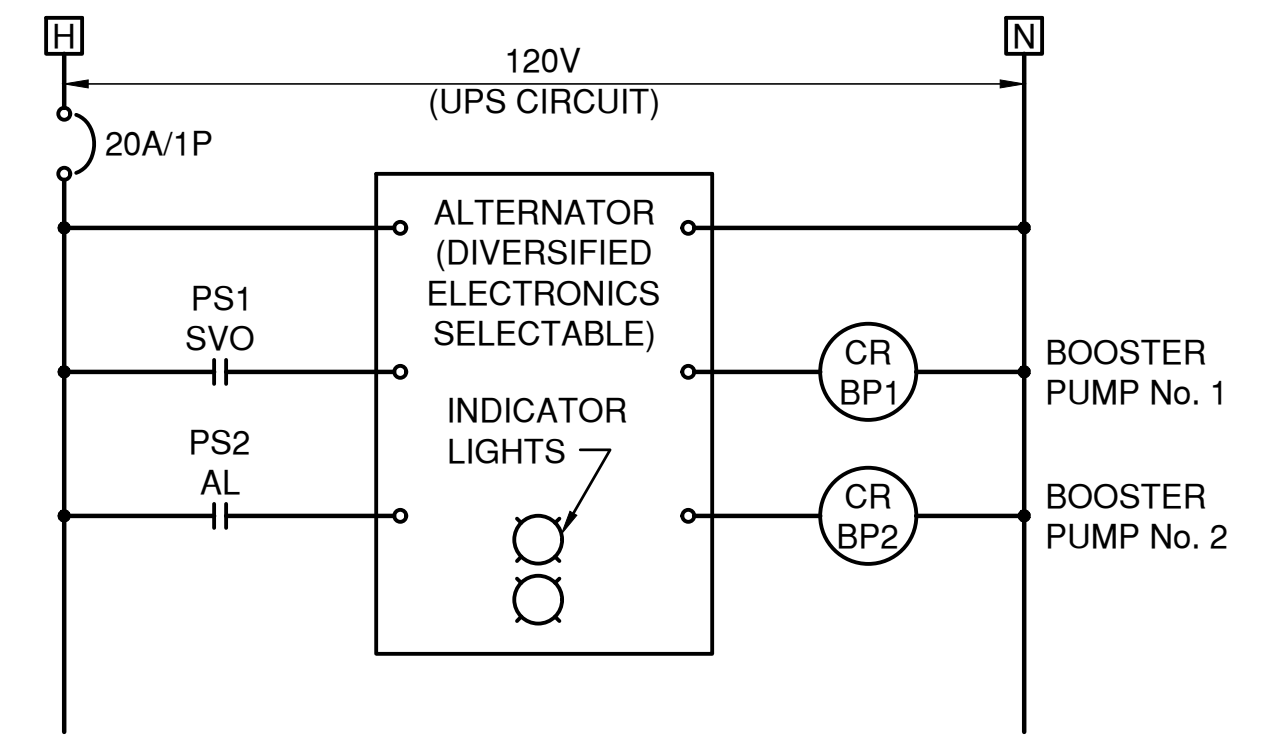
**LAS DOSING ALTERNATOR DIAGRAM**



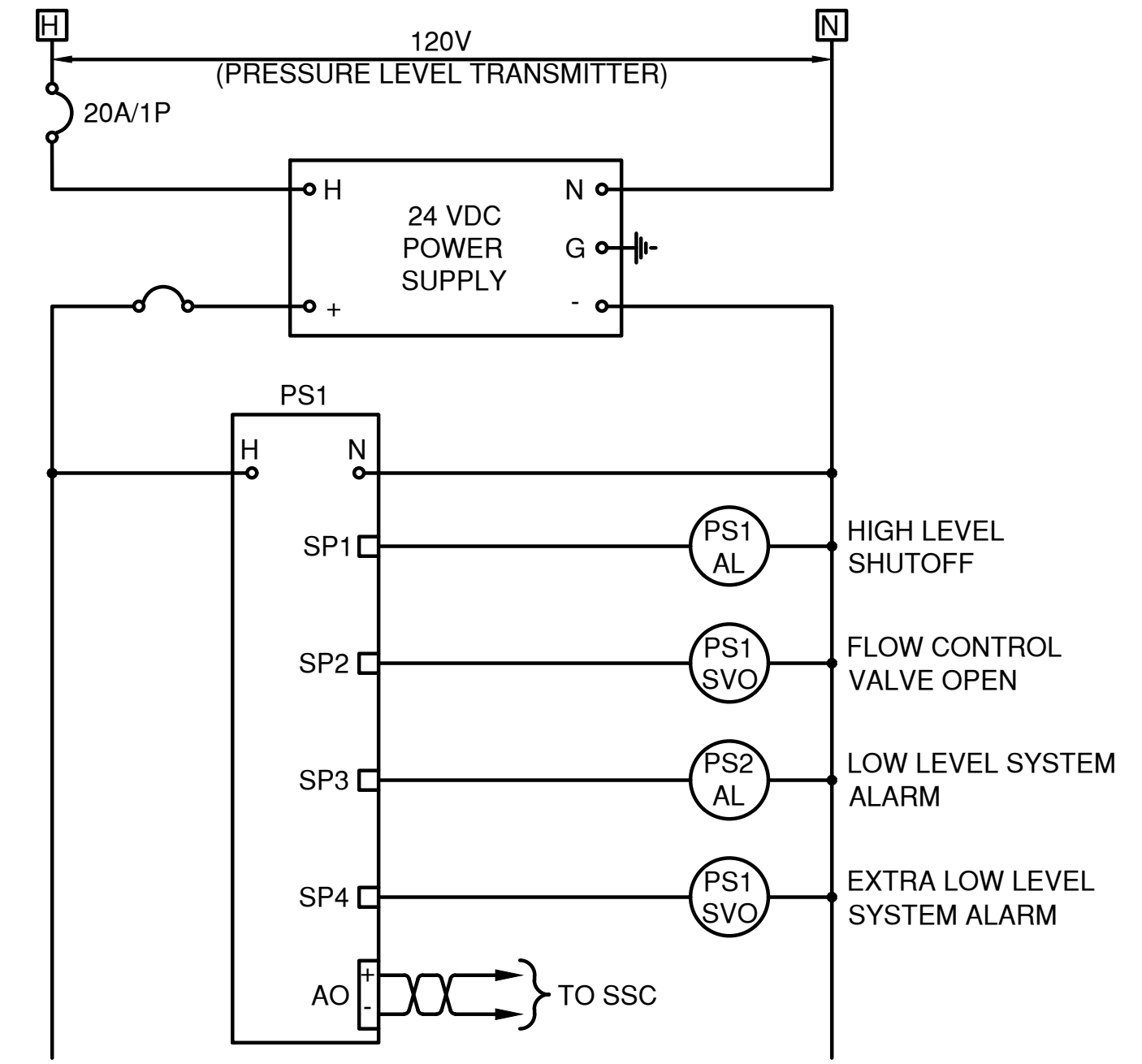
**NOTES:**  
 1. IN BACKUP MODE, DOSING SHALL BE PREPROGRAMMED.

**CHLORINE DOSING ALTERNATOR DIAGRAM**

- NOTE:**
- ARRANGE ALL DEVICES IN AUTOSENSORY PANEL IN AN ORDERLY MANNER. SUBMIT LAYOUT FOR APPROVAL.
  - SOLENOID VALVE SHALL FAIL TO CLOSE WHEN NOT PUT IN HAND OPEN OR CALLED TO OPEN BY SCADA SYSTEM. COORDINATE WITH CLA-VALVE VENDOR FOR ADDITIONAL RELAYS AS REQUIRED FOR FULLY OPERATIONAL SYSTEM.
  - COORDINATE WITH CITY OPERATIONS FOR DESIRED TIME DELAY VALUE. TIME DELAY IS INTENDED TO AVOID FALSE POSITIVE OVERFLOW ALARM.
  - PROVIDE ADDITIONAL BREAKERS FOR CLA-VALVE CONTROLLER, CLA-VALVE ACCESSORIES HEAT TRACE CONTROLLER, AND OTHER REQUIRED ACCESSORIES POWER BY CHEMICAL CONTROL (SCADA) PANEL.
  - SIGNALS FROM CLA-VALVE CONTROLLER SENT TO CITY PLC.



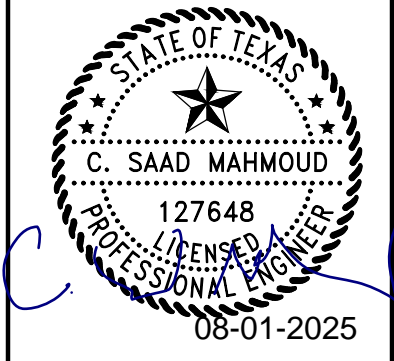
**BOOSTER PUMP ALTERNATOR DIAGRAM**



**EST PRESSURE SWITCH CONTROL DIAGRAM**

NO.	REVISIONS	DATE	BY

**Kimley & Horn**  
 STATE OF TEXAS REGISTRATION NO. F-928  
 11700 KATY FREEMAN SUITE 800 HOUSTON, TX 77079  
 WWW.KIMLEY-HORN.COM  
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KHA PROJECT	067785106
DATE	August, 2025
SCALE	N/A
DESIGNED BY:	SM
DRAWN BY:	TA
CHECKED BY:	EB

**CITY OF GALVESTON  
 UTMB EST  
 REHABILITATION**

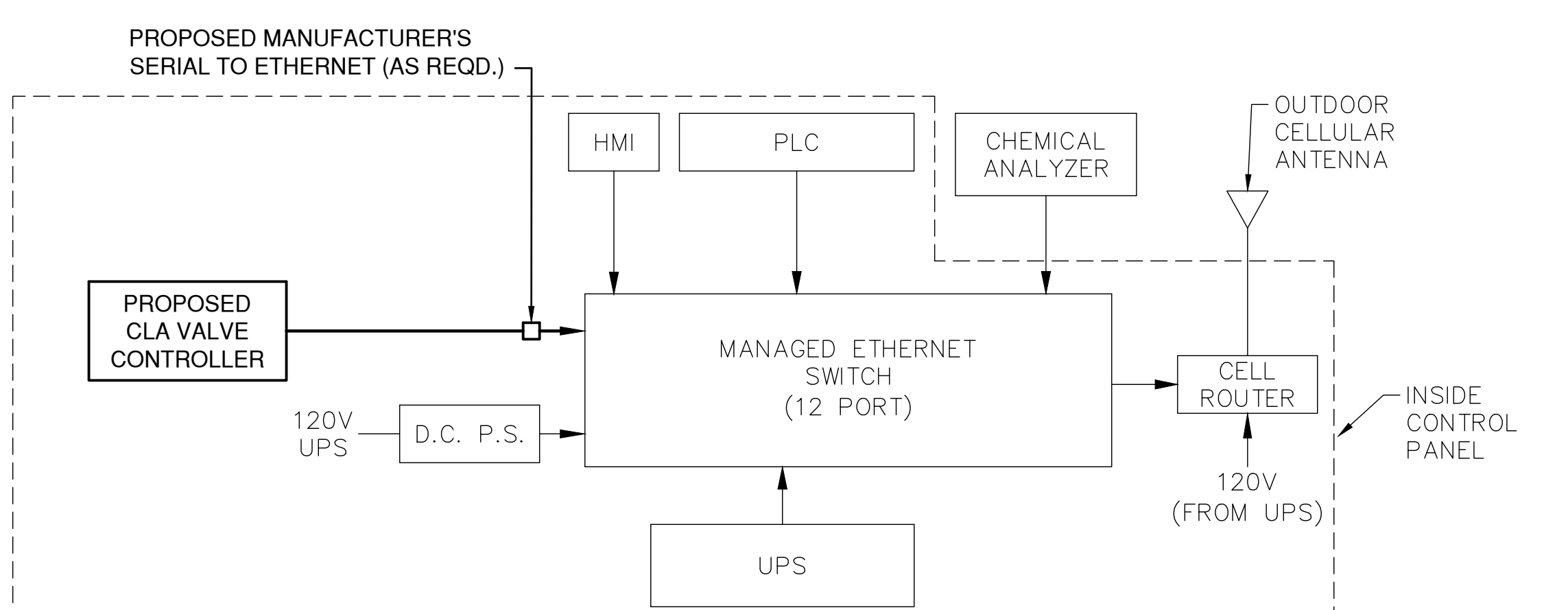
**ELECTRICAL  
 CONTROL DIAGRAM**

SHEET NUMBER  
**E-401**

**BURRER ENGINEERING**  
 17217 N. Eldridge, Tomball, TX 77377  
 Tel: 832-761-5220  
 TBPE No. F-20420  
 email: info@burrereng.com

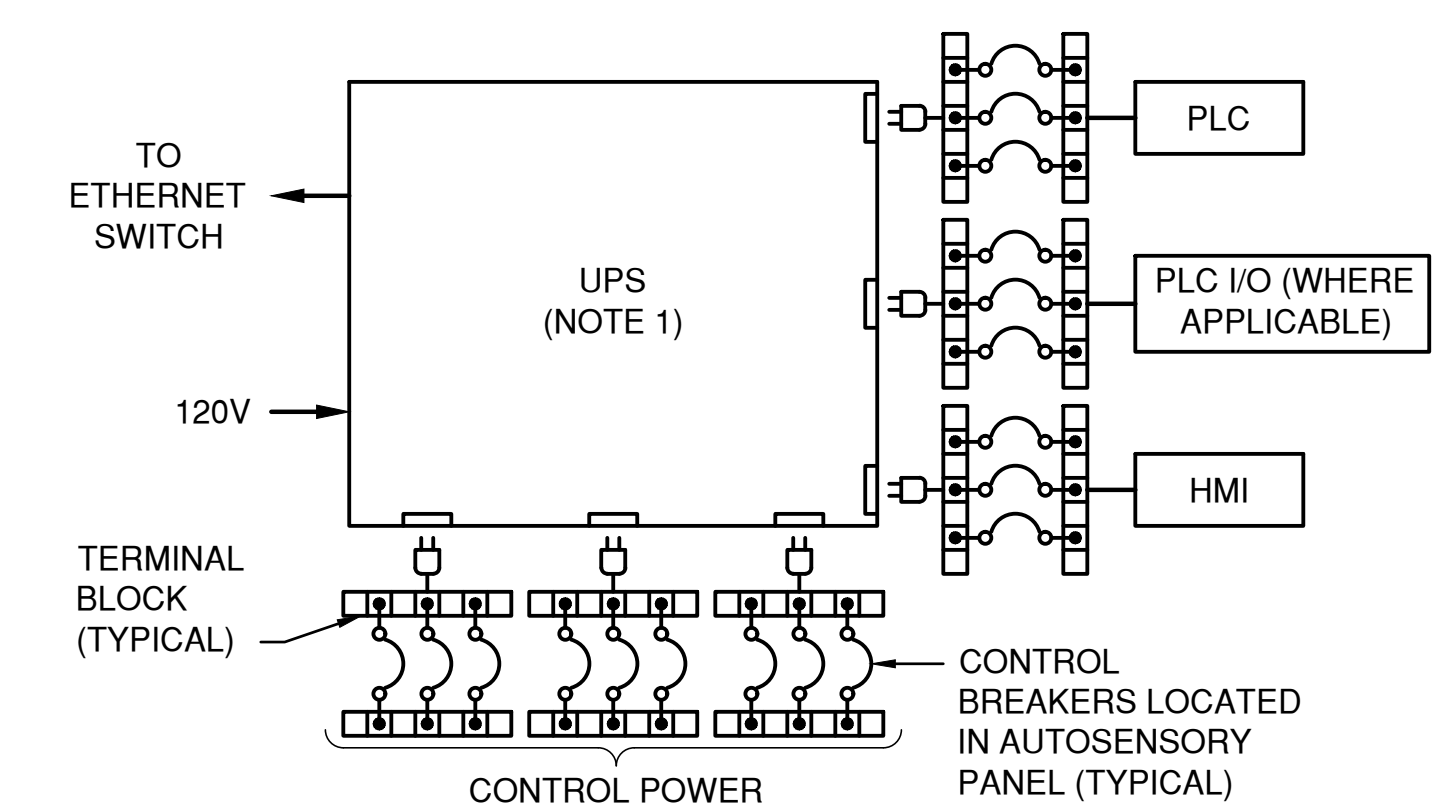
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2025-08-01 12:33:13, Soadm  
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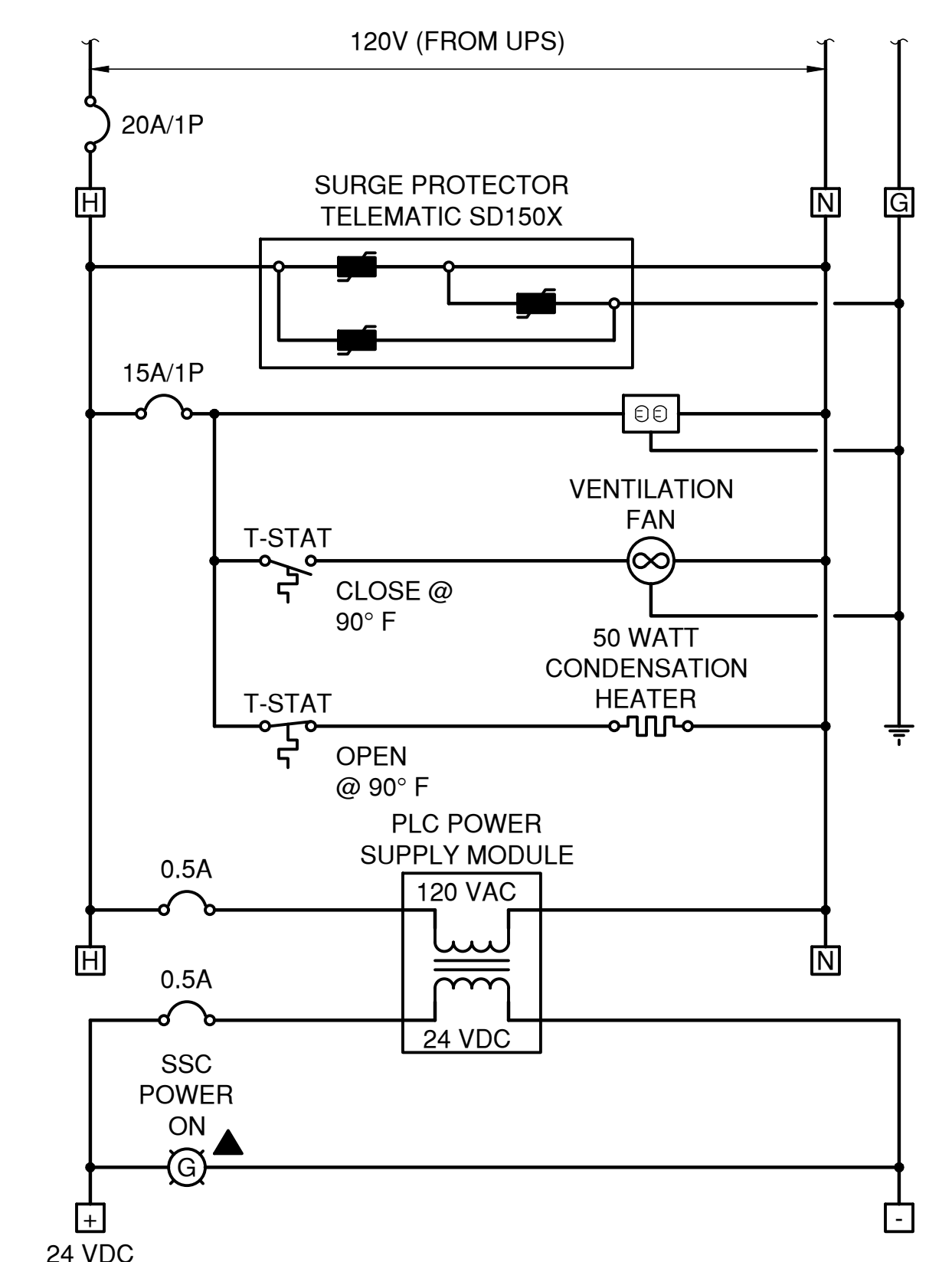
- NOTES:**
- PLC IS A T-2750 EUROTHERM/WATLOW. SEE SPECIFICATION 16950 - "PLC SCADA EQUIPMENT". PROVIDE NEW I/O MODULES AS REQUIRED PER I/O TABLES.
  - PROVIDE ADDITIONAL SPARE I/O'S OF EACH TYPE FOR UNDEFINED CONTROL FUNCTIONS. COORDINATE WITH ENGINEER.
  - ALL I/O RELAYS, CONTACTS, AND PLC TO BE POWERED BY 24 HOUR UPS.
  - PROGRAMMING SHALL BE PERFORMED BY WATLOW. COORDINATE WITH WATLOW FOR COMPLETE PROGRAMMING, COORDINATION, TESTING, EXPANSION, AND CONFIGURATION WITH CITY EMPLOYEES IN BASE BID. NO ADDITIONAL CHANGE IN CONTRACT AMOUNT SHALL BE APPROVED DUE TO LACK OF INVESTIGATION OF REQUIRED WORK FOR THIS PROJECT PROGRAMMING.

**NETWORK DIAGRAM**  
(NOTE 1)

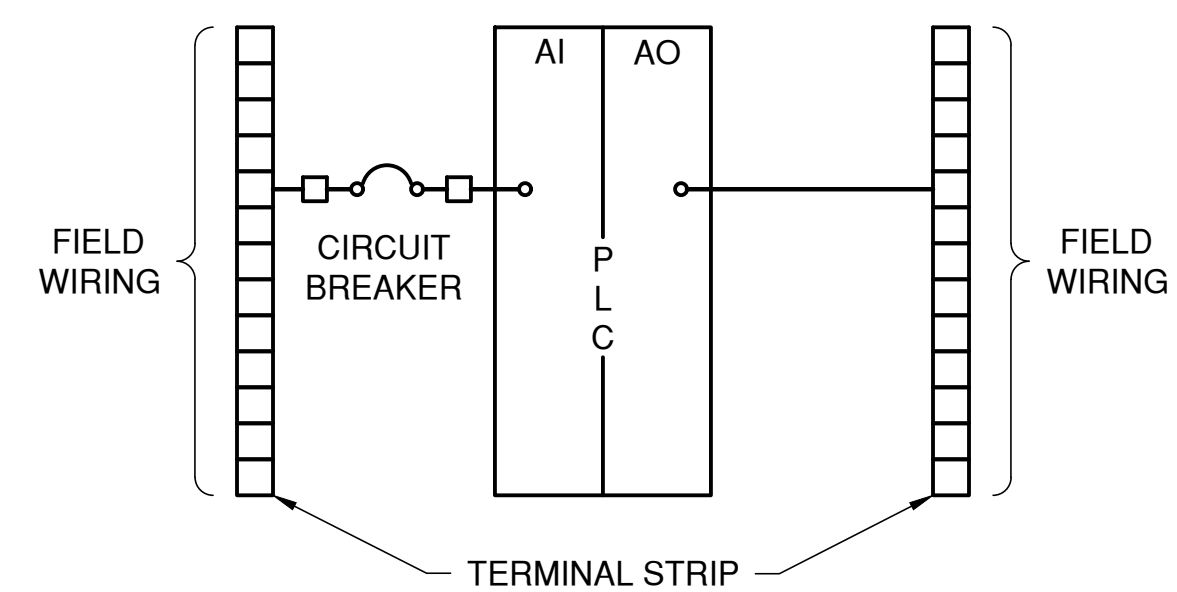


- NOTES:**
- PROVIDE EATON 5130 3,000VA UPS OR APPROVED EQUAL.
  - REFER TO CONTROL DIAGRAMS FOR CONTROLS REQUIRING UPS BACKUP.

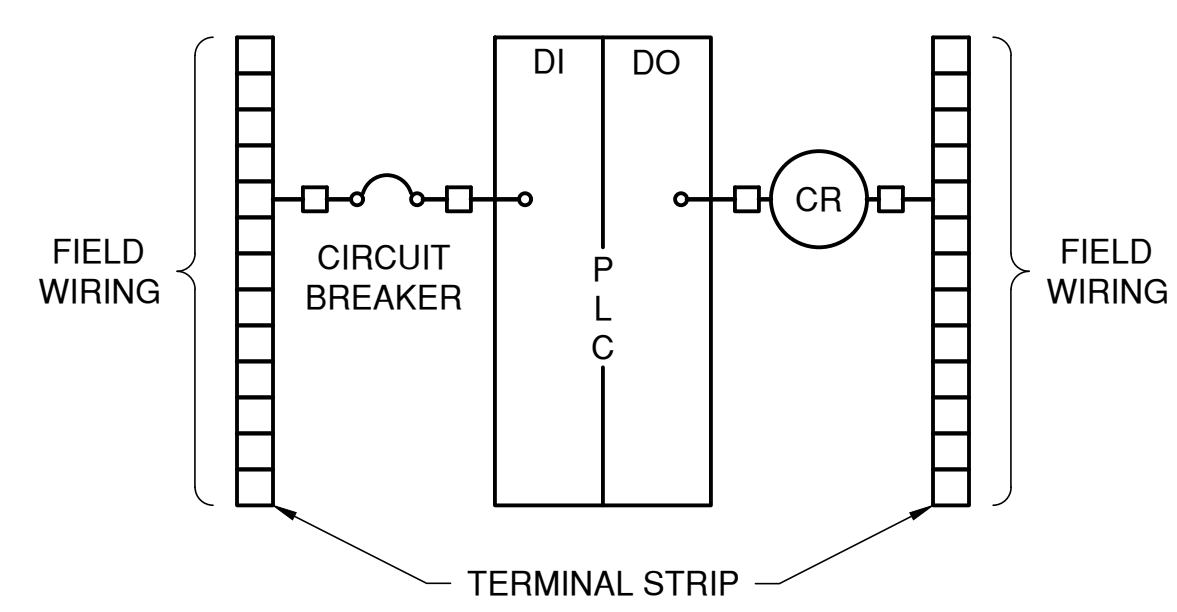
**UNINTERRUPTIBLE POWER SUPPLY DIAGRAM**



**PLC POWER DIAGRAM**  
(TYPICAL)



**TYPICAL ANALOG I/O DIAGRAM**



- NOTES:**
- PROVIDE ADDITIONAL RELAYS, CIRCUIT PROTECTION, AND/OR FUSES WHERE NOT EXISTING IN RELOCATED CONTROL PANEL.
  - COORDINATE AVAILABLE SPACE IN EXISTING CONTROL PANEL WITH WATLOW PRIOR TO BID.

**TYPICAL DISCRETE I/O DIAGRAM**

- GENERAL NOTES:**
- SEE CONTROL DIAGRAMS FOR ADDITIONAL I/O REQUIREMENTS.
  - ITEMS NOTED ON THIS PAGE ARE FOR CONTRACTOR USE WHERE EXISTING CONTROL PANEL EQUIPMENT REQUIRES REPLACEMENT OF SPECIFIC PIECES PER COORDINATION WITH CITY PROGRAMMING INTEGRATOR (WATLOW/EUROTHERM).

BY	DATE	REVISIONS

**Kimley-Horn**  
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 11700 KATY FREEMAN SUITE 800 HOUSTON, TX 77079  
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STATE OF TEXAS  
 C. SAAD MAHMOUD  
 127648  
 PROFESSIONAL ENGINEER  
 08-01-2025

KHA PROJECT	067785106
DATE	August, 2025
SCALE	N/A
DESIGNED BY:	SM
DRAWN BY:	TA
CHECKED BY:	EB

**CITY OF GALVESTON  
 UTMB EST  
 REHABILITATION**

**ELECTRICAL SOLID STATE CONTROLLER SHEET 1**  
 SHEET NUMBER  
 E-501

**BURRER ENGINEERING**  
 17217 N. Eldridge, Tomball, TX 77377  
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1-DIGITAL INPUT MODULE I/O SCHEDULE							
ITEM	I/O MOD. NOTE	DESCRIPTION	ALARM	EVENT	HISTORY	TREND GRAPHS	HMI
1	1	SOLENOID VALVE - HAND OPEN (FROM CLA VALVE CONTROLLER)		X	X		DISPLAY AND SHOW STATUS
2	2	SOLENOID VALVE - AUTO (FROM CLA VALVE CONTROLLER)		X	X		DISPLAY AND SHOW STATUS
3	3	SPARE					-
4	4	EST OVERFLOW	X	X	X		DISPLAY AND SHOW STATUS
5	5	CLA-VALVE OPEN		X	X		DISPLAY AND SHOW STATUS
6	6	CLA-VALVE CLOSED		X	X		DISPLAY AND SHOW STATUS
7	7	SPARE					
8	8	SPARE					
9	9	EST CONTROL TRANSFER - BACKUP MODE		X	X		DISPLAY AND SHOW STATUS
10	10	EST LOW LEVEL - FROM TRANSMITTER	X	X	X		DISPLAY AND SHOW STATUS
11	11	EST HIGH LEVEL - FROM TRANSMITTER	X	X	X		DISPLAY AND SHOW STATUS
10	10	EST - EXTRA LOW LEVEL - FROM TRANSMITTER	X	X	X		DISPLAY AND SHOW STATUS
11	11	SPARE					
12	12	SPARE					-
13	13	FLOW CONTROL VALVE OPEN/CLOSED - FROM TRANSMITTER		X	X		DISPLAY AND SHOW STATUS
14	14	BATTERY BACKUP	X	X	X		DISPLAY AND SHOW STATUS
15	15	SPARE					
16	16	SPARE					-
17	17	CONTROLLER FAIL	X	X	X		DISPLAY AND SHOW STATUS
18	18	CONTROLLER TRANSFER	X	X	X		DISPLAY AND SHOW STATUS
19	19	CHLORINE ROOM GAS LEAK	X	X	X		DISPLAY AND SHOW STATUS
20	20	EST DOOR INTRUSION	X	X	X		DISPLAY AND SHOW STATUS
21	21	SPARE					
22	22	SPARE					
23	23	SPARE					
24	24	SPARE					-

2-DIGITAL OUTPUT MODULE I/O SCHEDULE							
ITEM	I/O MOD. NOTE	DESCRIPTION	ALARM	EVENT	HISTORY	TREND GRAPHS	HMI
25	1	CLA-VALVE CALL TO OPEN		X	X		-
26	2	CLA-VALVE CALL TO CLOSE		X	X		-
27	3						
28	4	CONTROLLER FAIL	X	X	X		CONTROLLER FAIL TO BE TRIGGERED BY EST EXTRA LOW LEVEL, AND EST OVERFLOW, OR LOSS OF CONTROLLER POWER
29	5	CHEMICAL BOOSTER PUMP NO.1 RUN		X	X	X	-
30	6	CHEMICAL BOOSTER PUMP NO.2 RUN		X	X	X	-
31	7	CHEMICAL SOLENOID VALVE OPEN		X	X	X	-
32	8	CHEMICAL SOLENOID VALVE CLOSE		X	X	X	-
33	9	LAS DOSING PUMP NO.1 RUN		X	X	X	-
34	10	LAS DOSING PUMP NO.2 RUN		X	X	X	-
35	11	CHLORINATOR NO.1 RUN		X	X	X	-
36	12	CHLORINATOR NO.2 RUN		X	X	X	-
37	13	SPARE					-
38	14	SPARE					-
39	15	SPARE					-
40	16	SPARE					-

3-ANALOG INPUT MODULE I/O SCHEDULE							
ITEM	I/O MOD. NOTE	DESCRIPTION	ALARM	EVENT	HISTORY	TREND GRAPHS	HMI
41	1	EST LEVEL (FROM PS-1 TRANSMITTER)		X	X	X	DISPLAY AND SHOW STATUS
42	2	EST LEVEL (FROM PS-2 TRANSMITTER)		X	X	X	DISPLAY AND SHOW STATUS
43	3	LAS CHEMICAL TANK LEVEL			X	X	DISPLAY AND SHOW STATUS
44	4	SPARE					-
45	5	CL2 TANK SCALE NO.1			X	X	DISPLAY AND SHOW STATUS
46	6	CL2 TANK SCALE NO.2			X	X	DISPLAY AND SHOW STATUS
47	7	CHLORINE LEAK CONCENTRATION			X	X	DISPLAY AND SHOW STATUS
48	8	CHEMICAL ANALYZER (FILL LINE) - RESIDUAL CHLORINE			X	X	DISPLAY AND SHOW STATUS
49	9	CHEMICAL ANALYZER (FILL LINE) - TOTAL CHLORINE			X	X	DISPLAY AND SHOW STATUS
50	10	CHEMICAL ANALYZER (FILL LINE) - FREE AMMONIA			X	X	DISPLAY AND SHOW STATUS
51	11	CHEMICAL ANALYZER (FILL LINE) - TOTAL AMMONIA			X	X	DISPLAY AND SHOW STATUS
52	12	CHEMICAL ANALYZER (DRAIN LINE) - RESIDUAL CHLORINE			X	X	DISPLAY AND SHOW STATUS
53	13	CHEMICAL ANALYZER (DRAIN LINE) - TOTAL CHLORINE			X	X	DISPLAY AND SHOW STATUS
54	14	CHEMICAL ANALYZER (DRAIN LINE) - FREE AMMONIA			X	X	DISPLAY AND SHOW STATUS
55	15	CHEMICAL ANALYZER (DRAIN LINE) - TOTAL AMMONIA			X	X	DISPLAY AND SHOW STATUS
56	16	EST FILL LINE FLOW			X	X	DISPLAY AND SHOW STATUS

4-ANALOG OUTPUT MODULE I/O SCHEDULE							
ITEM	I/O MOD. NOTE	DESCRIPTION	ALARM	EVENT	HISTORY	TREND GRAPHS	HMI
57	1	CLA - VALVE POSITION		X	X	X	ALLOW POSITION PERCENTAGE
58	2	LAS PUMP NO. 1 PACING		X	X	X	-
59	3	LAS PUMP NO. 2 PACING		X	X	X	-
60	4	CHLORINATOR NO. 1 PACING		X	X	X	-
61	5	CHLORINATOR NO. 2 PACING		X	X	X	-
62	6	SPARE					-
63	7	SPARE					-
64	8	SPARE					-

KHA PROJECT	067785106
	DATE
August, 2025	SCALE: N/A
DESIGNED BY: SM	DRAWN BY: TA
CHECKED BY: EB	

**CITY OF GALVESTON**  
**UTMB EST**  
**REHABILITATION**

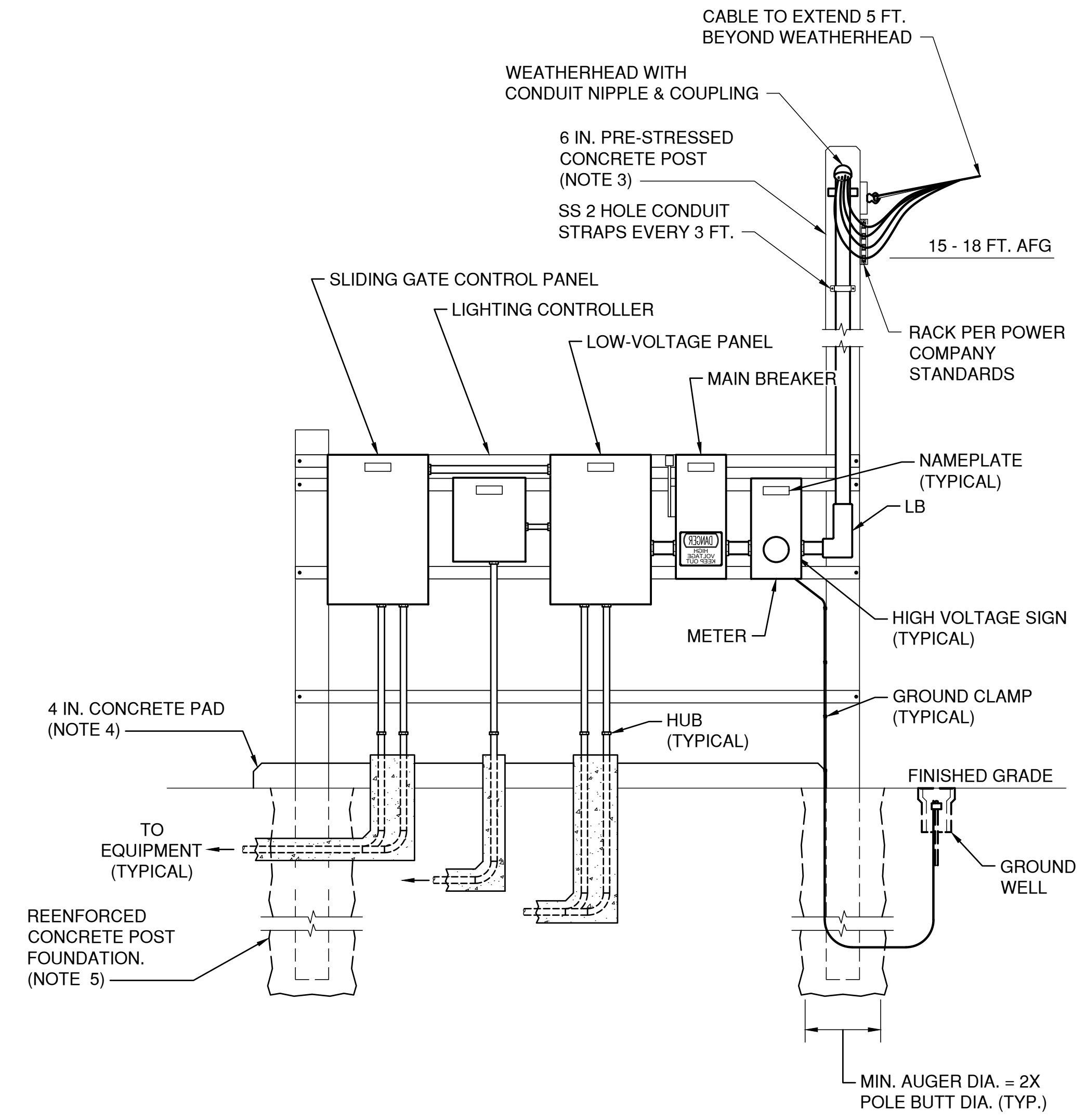
**ELECTRICAL SOLID STATE CONTROLLER SHEET 2**

SHEET NUMBER  
**E-502**

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 TBPE No. F-20420  
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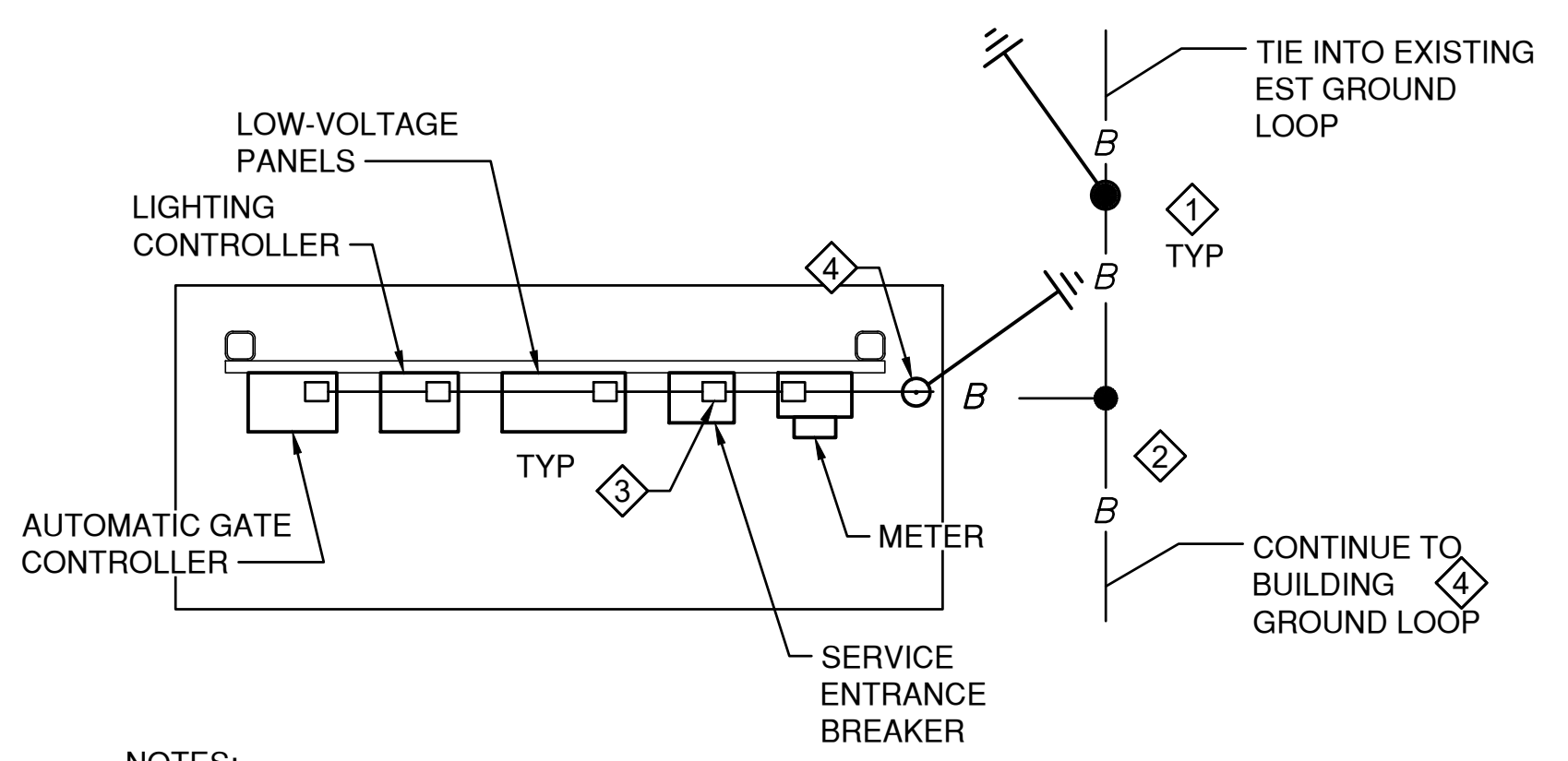
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- NOTES:**
1. MOUNT ALARM LIGHT AS DIRECTED BY OWNER'S REPRESENTATIVE. ALARM LIGHT TO BE VISIBLE FROM STREET.
  2. LIGHT FIXTURE SHALL BE ORIENTED AS SHOWN ON SITE PLAN.
  3. COORDINATE EXACT TERMINAL POLE LOCATION WITH POWER COMPANY PRIOR TO PURCHASE. WHERE POWER REQUIRES SEPARATE TERMINAL POLE, PROVIDE ADDITIONAL POST FOR EQUIPMENT RACK AND ROUTE CONDUIT UNDERGROUND FROM TERMINAL POLE TO RACK AS REQUIRED.
  4. CONCRETE PAD SHALL EXTEND MINIMUM OF 4 FT. IN FRONT OF ALL EQUIPMENT. PROVIDE #4 REBAR 16 INCH. O.C. EACH WAY.
  5. POST SHALL BE MOUNTED IN CONCRETE FOUNDATION. CONCRETE FOUNDATION SHALL EXTEND TO A MINIMUM OF 4 FT. FOR POST 10 FT OR LESS AND 6 FT. FOR POST THAT EXCEED 10 FT. FOUNDATION SHALL BE REINFORCED WITH # 4 REBAR 16 IN. O.C. EACH WAY.

**EQUIPMENT RACK INSTALLATION DETAIL**  
 N.T.S.



- NOTES:**
1. THE GROUNDING SYSTEM SHALL BE TESTED BY AN APPROVED TESTING FIRM THE ENSURE THE RESISTANCE TO GROUND IS NO GREATER THAN 5 OHMS. CONTRACTOR TO SUBMIT GROUND TESTING REPORT TO OWNER'S REPRESENTATIVE.
- KEYED NOTES:**
- 1 3/4"Ø X10' COPPER CLAD GROUND ROD. EXOTHERMICALLY WELDED TO GROUND CABLE BURIED MIN 18" BELOW GRADE.
  - 2 #4/0 SOFT DRAWN BARE COPPER CABLE BURIED MIN 18" BELOW GRADE (TYP ALL BELOW GRADE CABLE). EXOTHERMICALLY WELDED ALL BELOW GRADE CONNECTIONS.
  - 3 EXTEND UP INTO EACH PANEL AND GROUND TO GROUND BUS. REFER TO EQUIPMENT CONNECTION TO GROUND MAT DETAIL.
  - 4 3/4"Ø X10' COPPER CLAD GROUND ROD. REFER TO GROUNDING SYSTEM TEST WELL INSTALLATION DETAIL.

**ELECTRICAL RACK GROUNDING DETAIL**  
 N.T.S.

BY	DATE	REVISIONS

**Kimley >>> Horn**  
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 C. SAAD MAHMOUD  
 127648  
 PROFESSIONAL ENGINEER  
 08-01-2025

KHA PROJECT	067785106
DATE	August, 2025
SCALE:	AS NOTED
DESIGNED BY:	SM
DRAWN BY:	TA
CHECKED BY:	EB

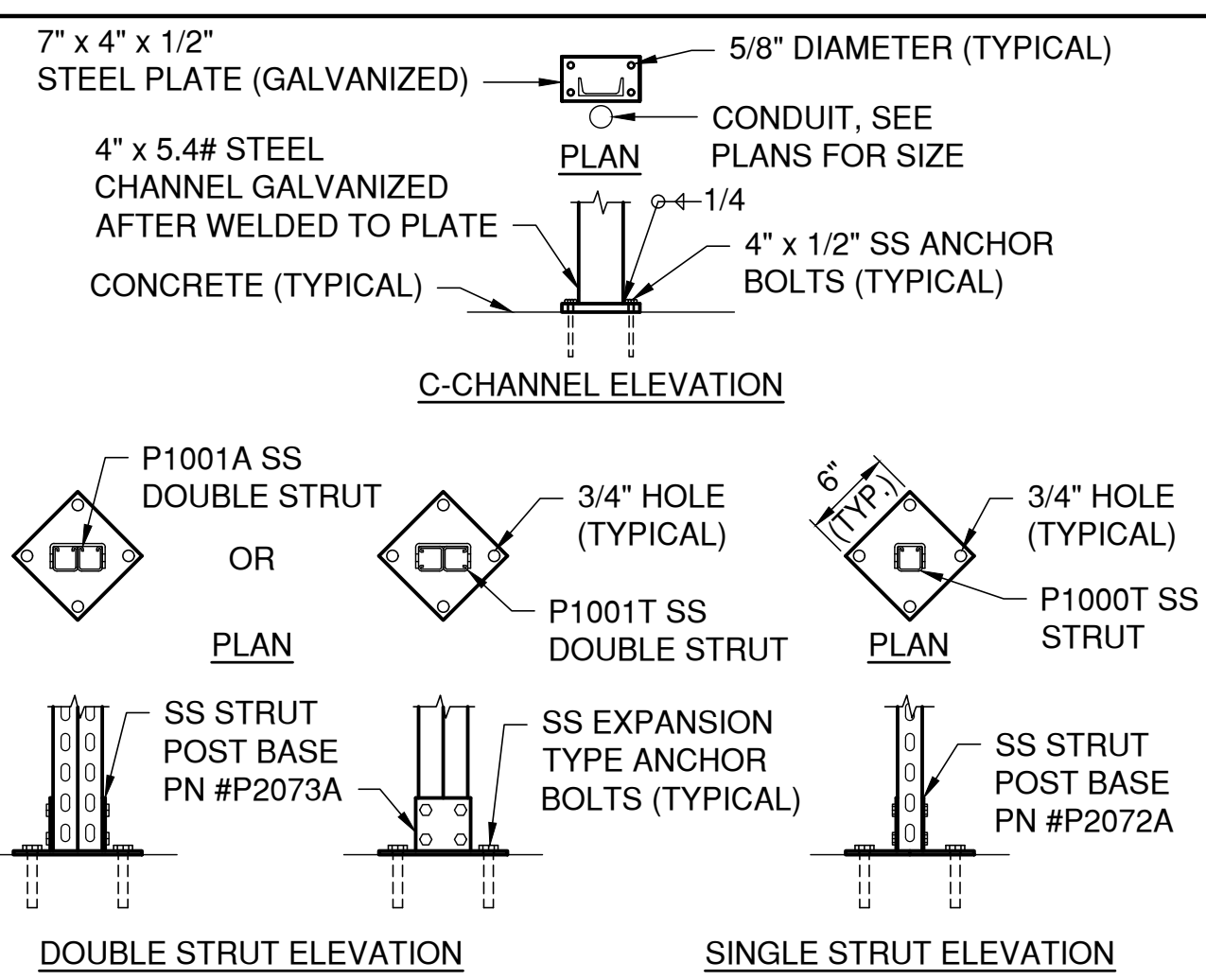
**CITY OF GALVESTON**  
**UTMB EST**  
**REHABILITATION**

**ELECTRICAL**  
**DETAILS SHEET 1**  
 SHEET NUMBER  
**E-601**

**BURRER**  
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 17217 N. Eldridge, Tomball, TX 77377  
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 email: info@burrereng.com

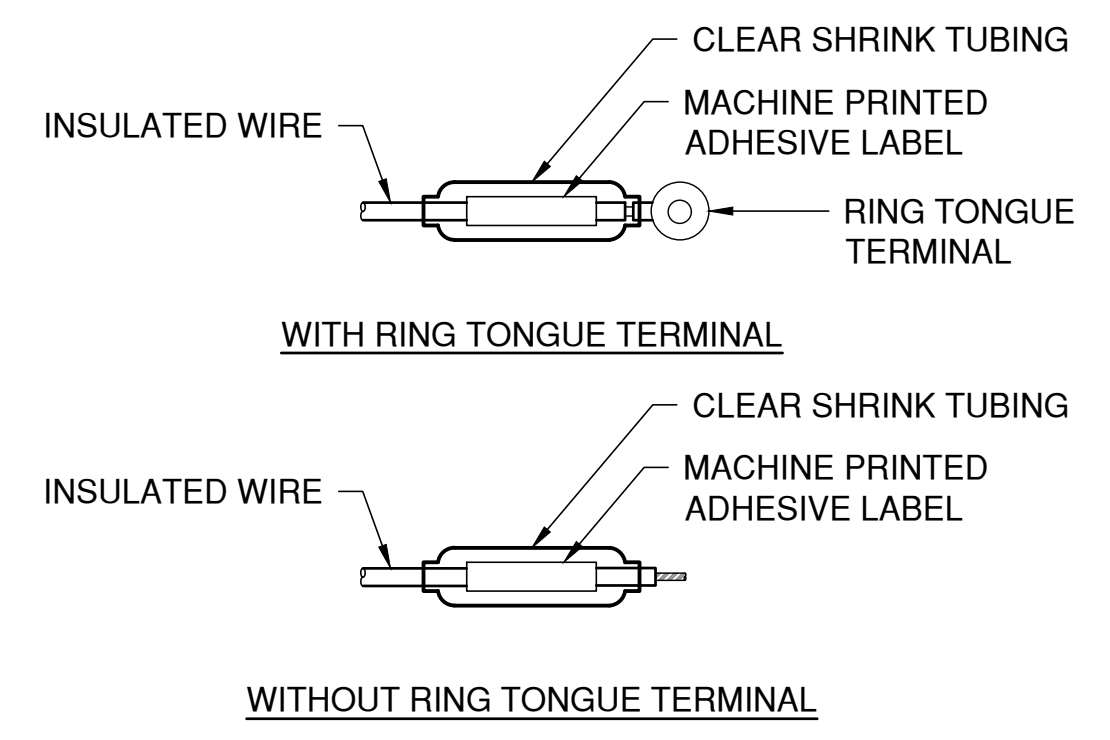
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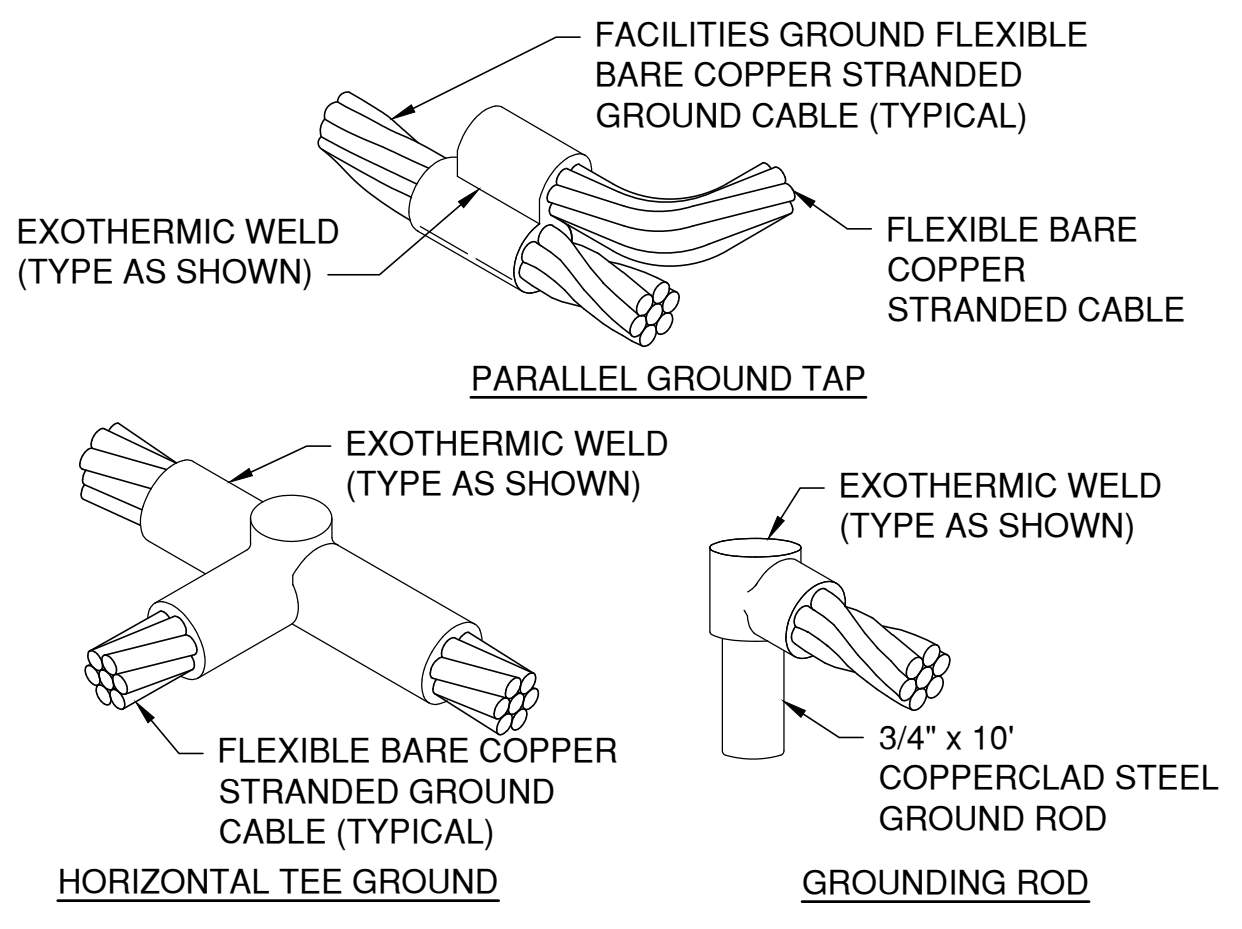
**NOTE:**  
 1. REFER TO PLANS FOR APPROPRIATE APPLICATION.

**BASE PLATE MOUNTING DETAIL**  
 N.T.S.



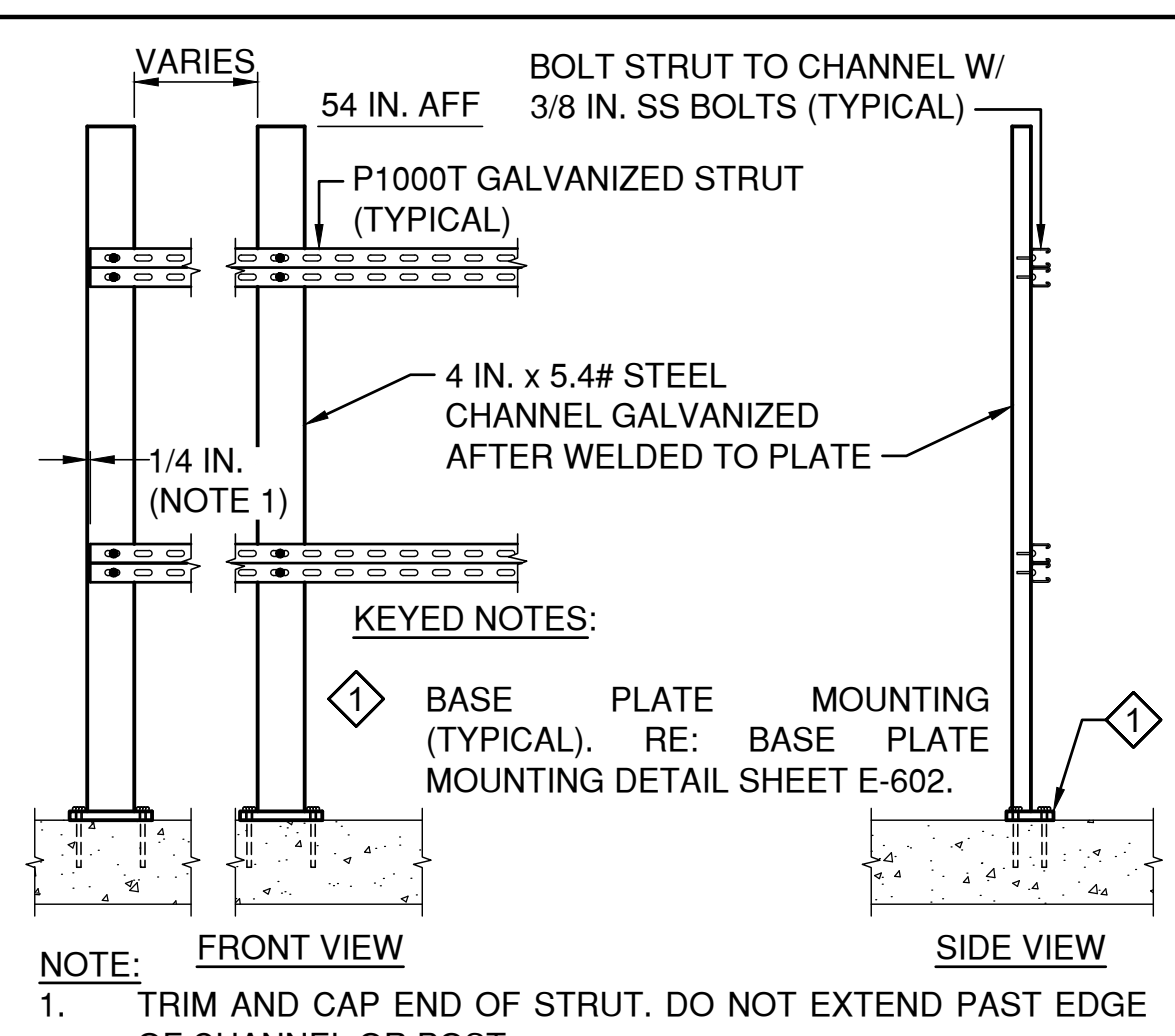
**NOTES:**  
 1. WHERE POSSIBLE RING TERMINALS SHALL BE USED. ONE OF THE ABOVE METHODS MUST BE USED ON ALL WIRE #8 AWG AND SMALLER. THE SAME MUST ALSO BE USED ON LARGER WIRE UNLESS AN ALTERNATE METHOD IS SUBMITTED AND APPROVED.

**WIRE TERMINATION AND MARKING DETAIL**  
 N.T.S.



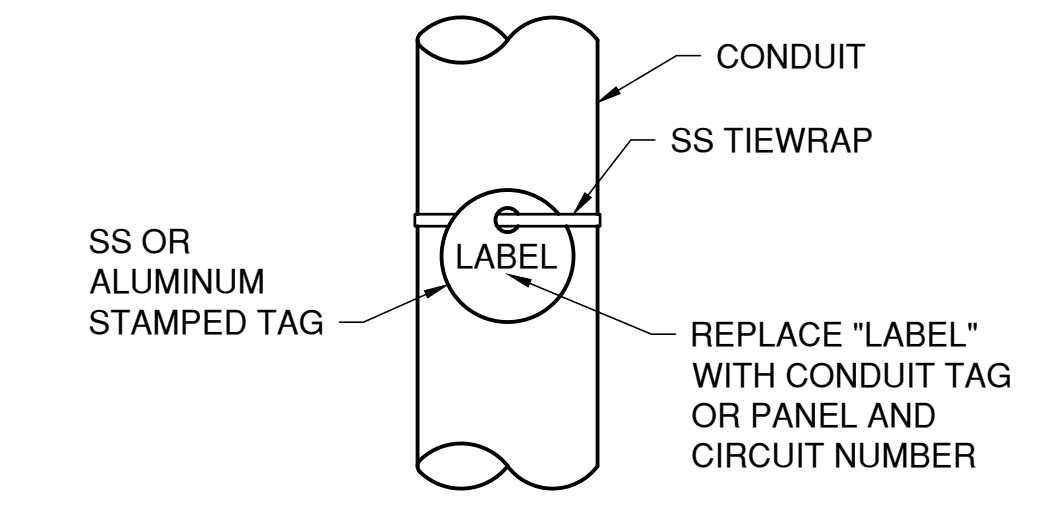
**NOTE:**  
 1. SPRAY ALL EXPOSED GROUNDING CONNECTORS AND CABLE WITH SCOTCHKOTE CORROSION PROTECTION - APPLY SEPARATE COATS; TWO MINIMUM ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

**GROUNDING CONNECTION DETAIL**  
 N.T.S.



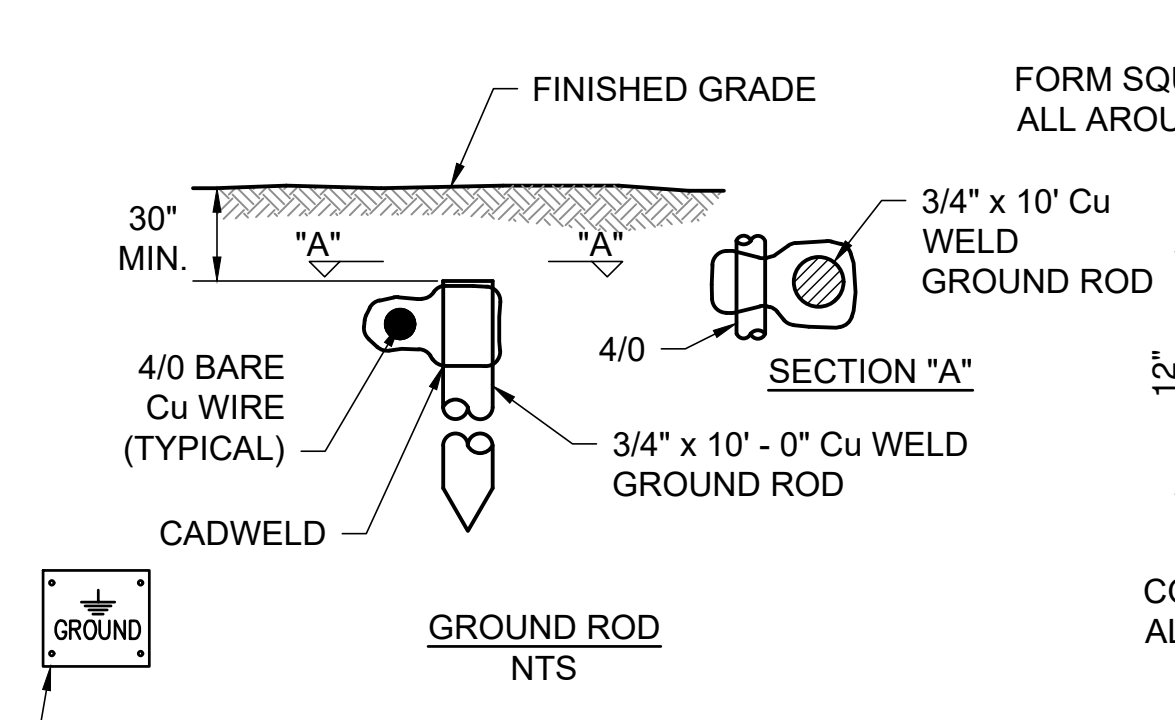
**NOTE:**  
 1. TRIM AND CAP END OF STRUT. DO NOT EXTEND PAST EDGE OF CHANNEL OR POST.

**C-CHANNEL SUPPORT DETAIL**  
 N.T.S.



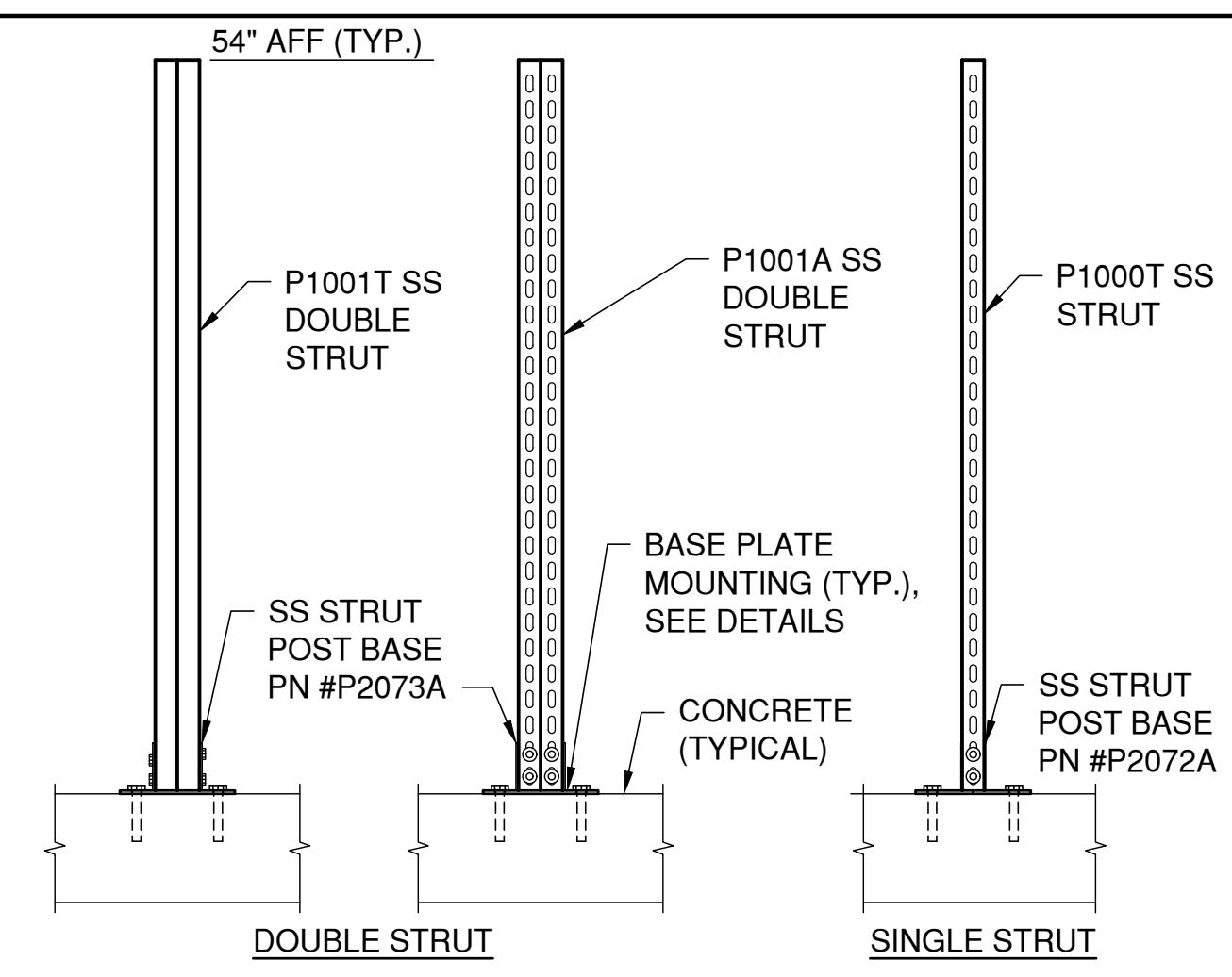
**NOTE:**  
 1. AS-BUILT DRAWINGS SHOULD CONTAIN RECORD OF ACTUAL INSTALLED CONDUITS AND CONDUCTORS THAT COORDINATE WITH FIELD LABELS. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

**CONDUIT LABEL DETAIL**  
 N.T.S. (TYPICAL)



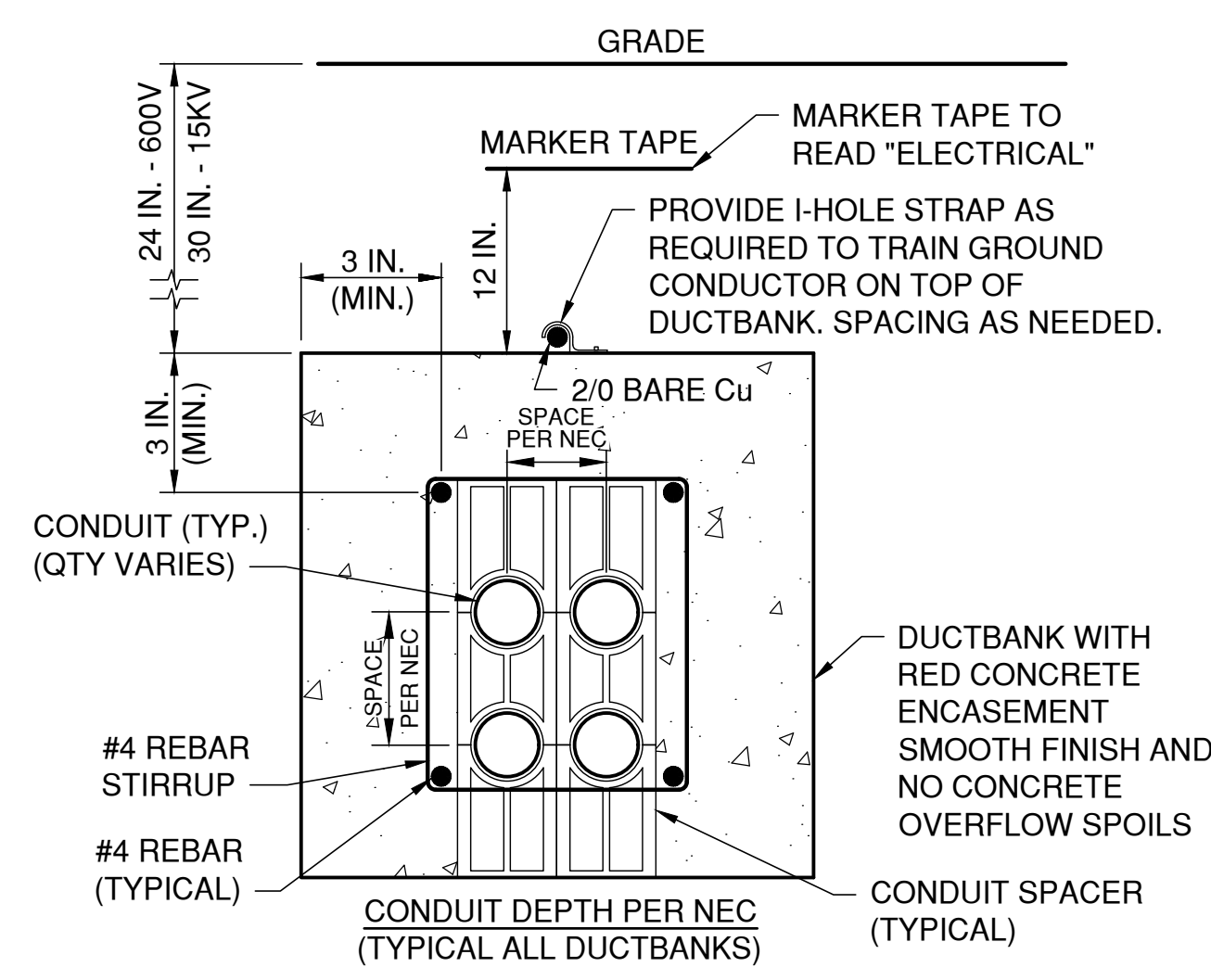
**NOTES:**  
 1. ANY EXPOSED OR ABOVE GRADE CONNECTIONS SHALL BE MECHANICAL TYPE WITH CRIMP LUGS. USE CADWELD FOR BURIED LOCATIONS.  
 2. EXOTHERMICALLY WELD ALL BELOW GRADE CONNECTIONS.  
 3. EXTEND #6 SOFT DRAWN BARE COPPER CABLE UP INTO ATS/EQUIPMENT PANELS AND GROUND TO GROUND BUS.

**GROUNDING SYSTEM TEST WELL DETAIL**  
 N.T.S.

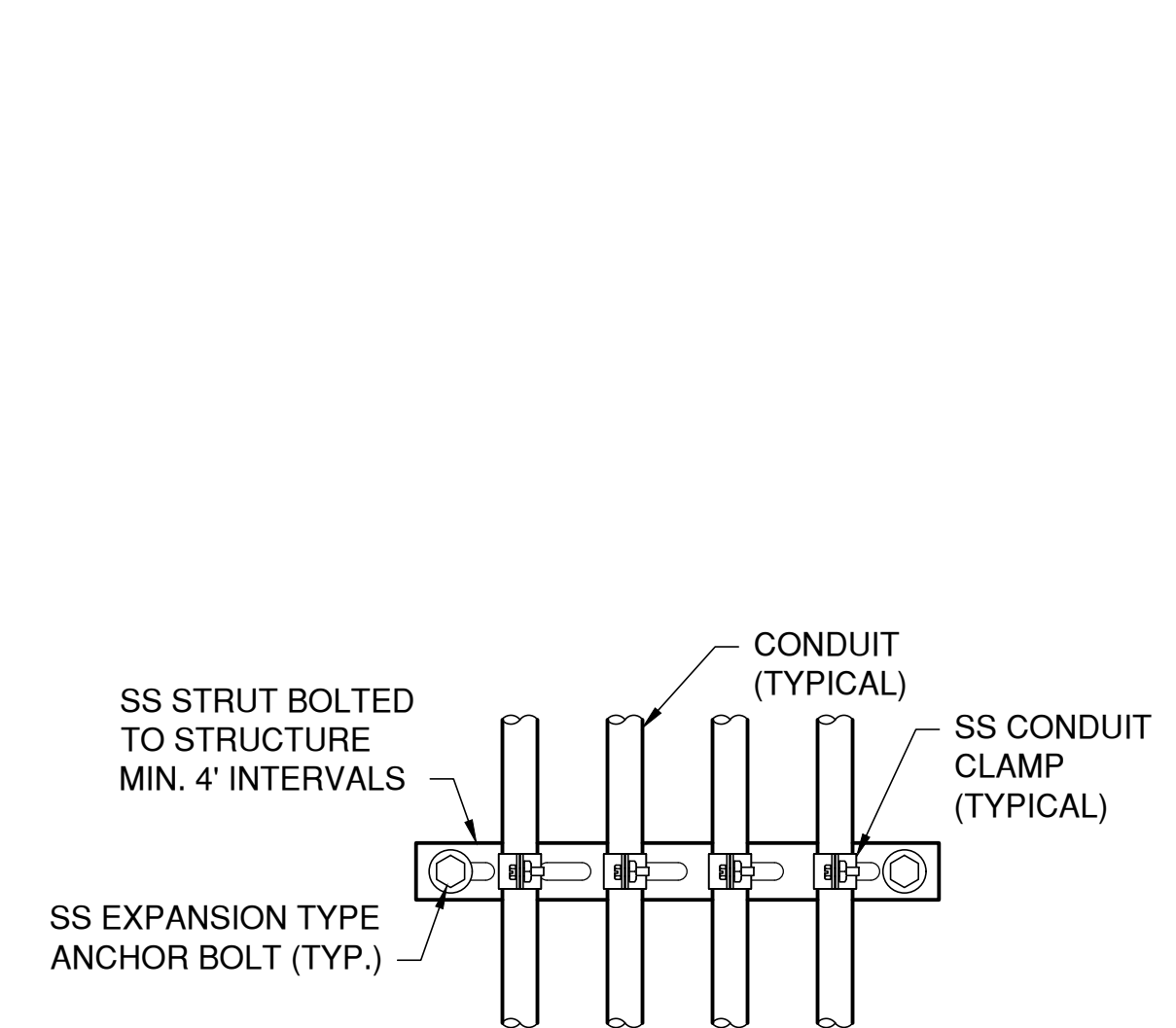


**NOTE:**  
 1. REFER TO PLANS FOR APPROPRIATE APPLICATION.

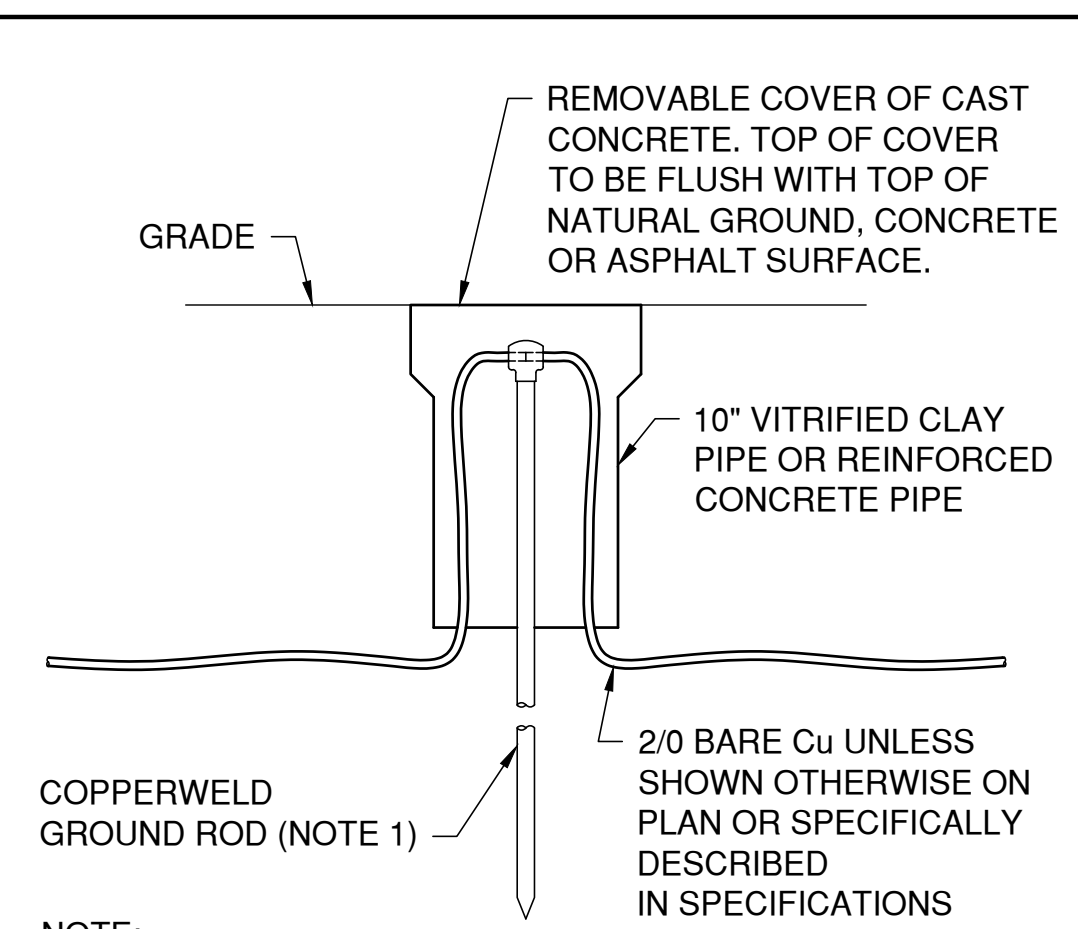
**STRUT SUPPORT DETAIL**  
 N.T.S.



**DUCTBANK CONSTRUCTION DETAIL**  
 N.T.S.



**CONDUIT SUPPORT DETAIL**  
 N.T.S.



**NOTE:**  
 1. GROUND ROD SHALL BE 3/4" x 20' FOR SURGE PROTECTION GROUND AND LIGHTNING PROTECTION SYSTEMS. ALL OTHER APPLICATIONS SHALL BE 3/4" x 10'

**GROUND WELL DETAIL**  
 N.T.S.

NO.	REVISIONS	DATE	BY

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CHECKED BY:	EB

**CITY OF GALVESTON**  
**UTMB EST**  
**REHABILITATION**

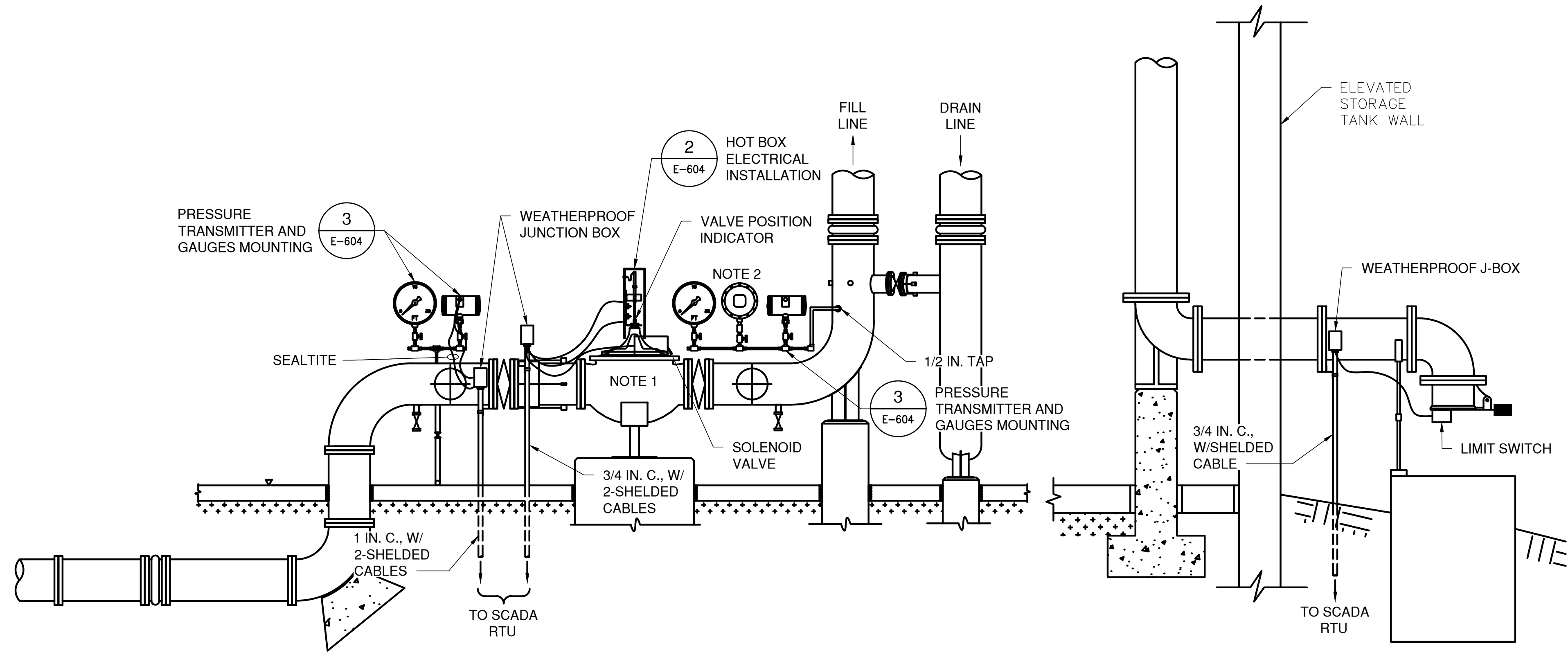
**ELECTRICAL**  
**DETAILS SHEET 2**

SHEET NUMBER  
**E-602**

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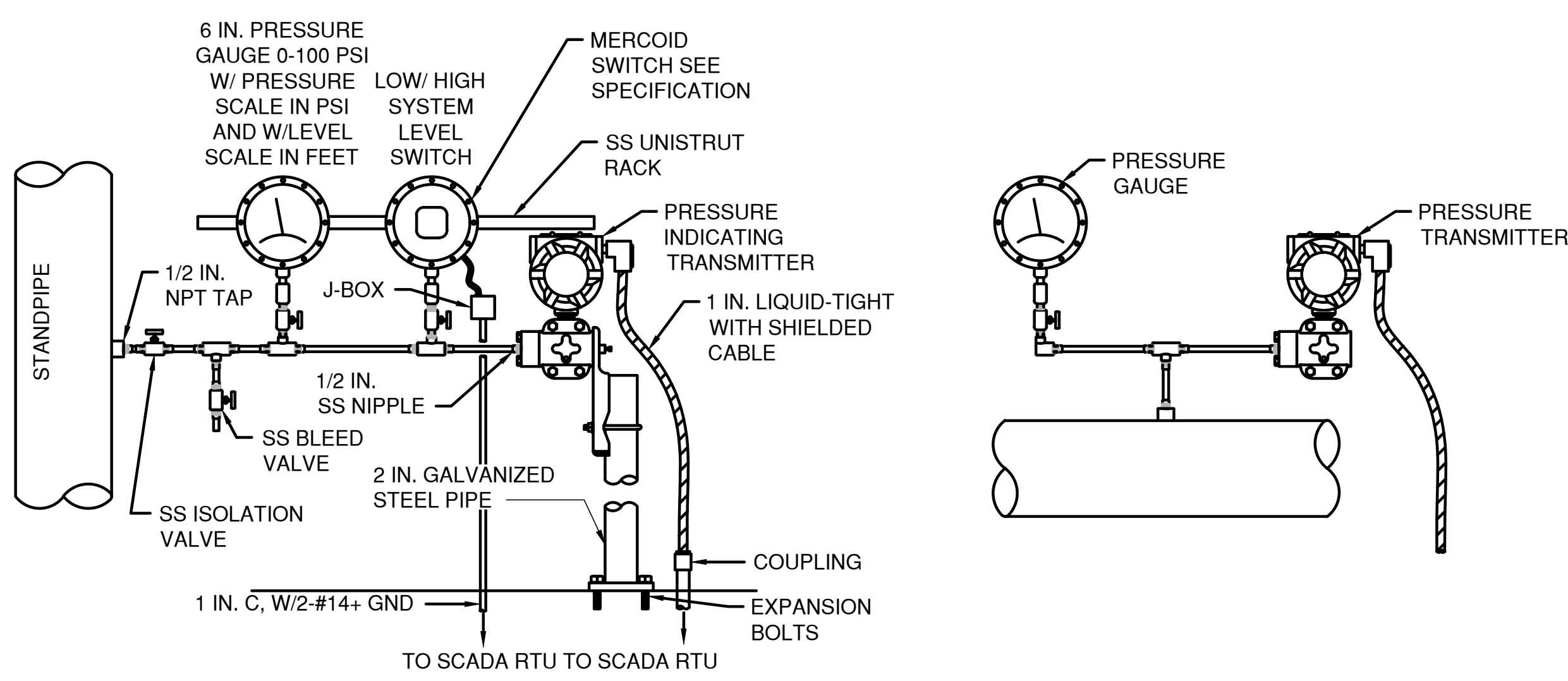
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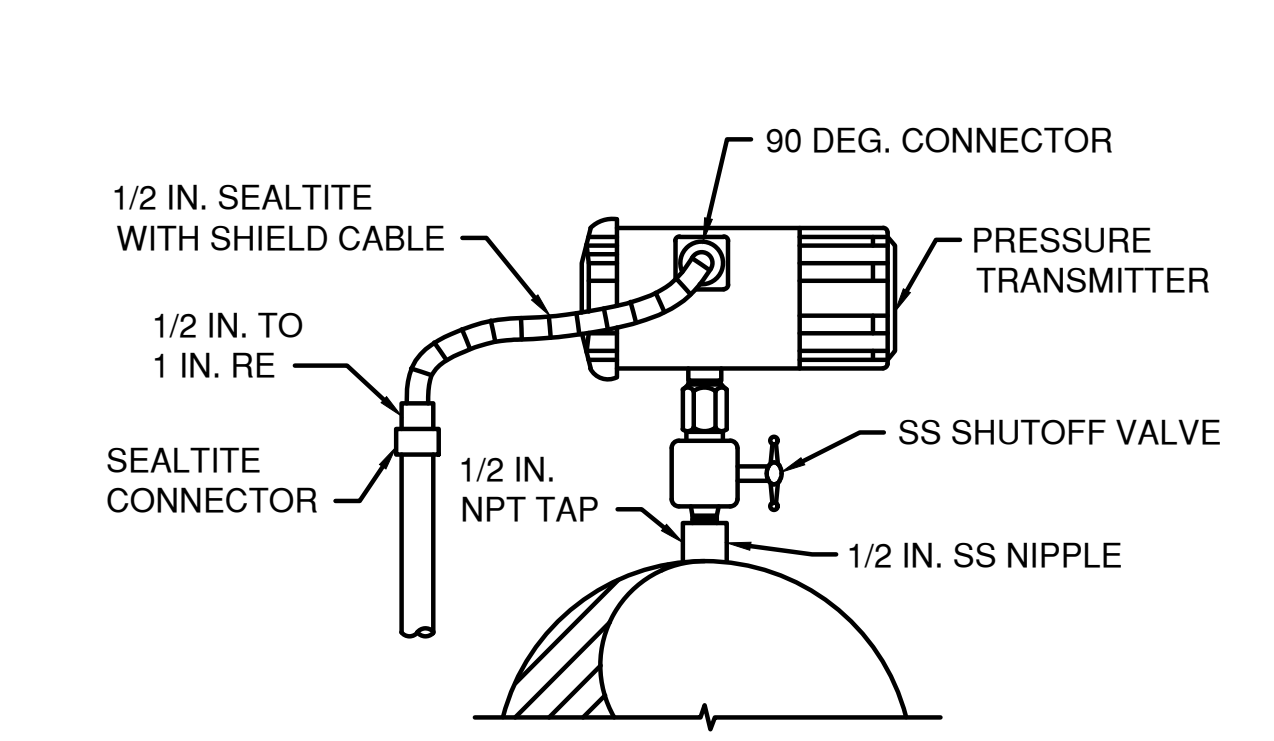


- NOTES:**
1. REFER TO CIVIL/STRUCTURAL PLANS FOR VALVE SPECIFICATIONS.
  2. PROVIDE SUPPORT FOR ALL DEVICES WHERE NOT INCLUDED ON CLA VALVE HOUSING.
  3. CLA VALVE SHALL INCLUDE MANUAL ADJUSTMENT UNDER CONTROLLER FAILURE. PROVIDE VENDOR PROVIDED OPTIONS FOR FLOW, PRESSURE, PANEL GAUGES, AND MODULATION INSTRUMENTATION. ALL INSTRUMENTATION TO HAVE DISCRETE AND ANALOG CONNECTIONS TO CLA VALVE CONTROLLER.
  4. PIPING SHOWN IS DIAGRAMMATICAL IN NATURE. REFER TO CIVIL SHEETS FOR PIPING LAYOUT.

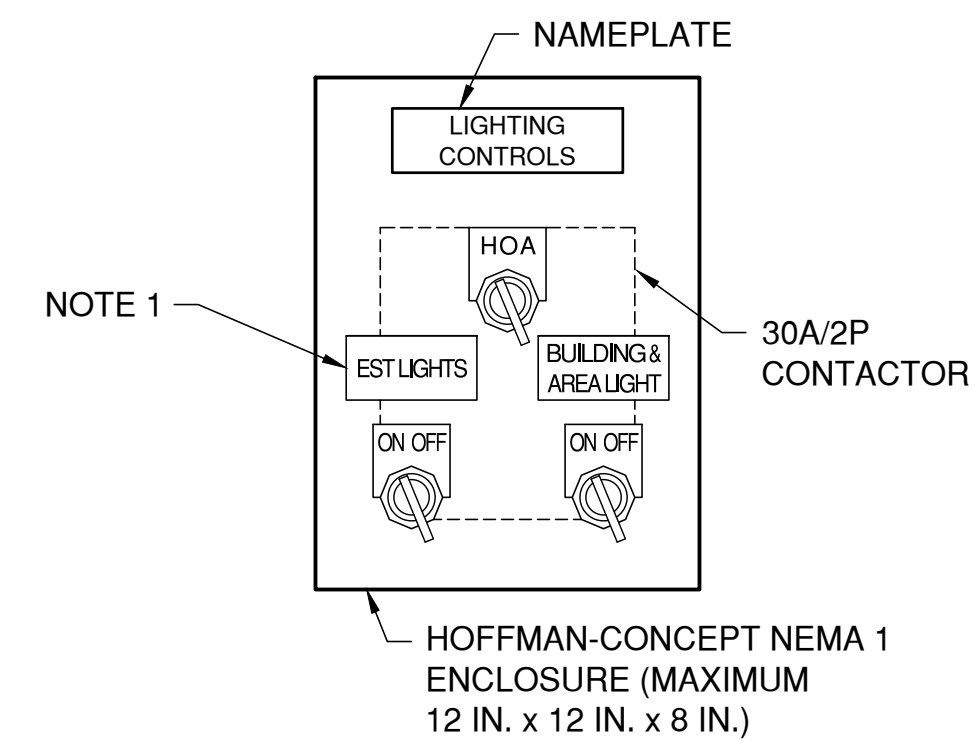
**1 ALTITUDE CONTROL VALVE ASSEMBLY ELEVATION DETAIL**  
 N.T.S.



**2 PRESSURE TRANSMITTER AND GAUGES MOUNTING DETAIL**  
 N.T.S.



**3 PRESSURE TRANSMITTER DETAIL**  
 N.T.S.



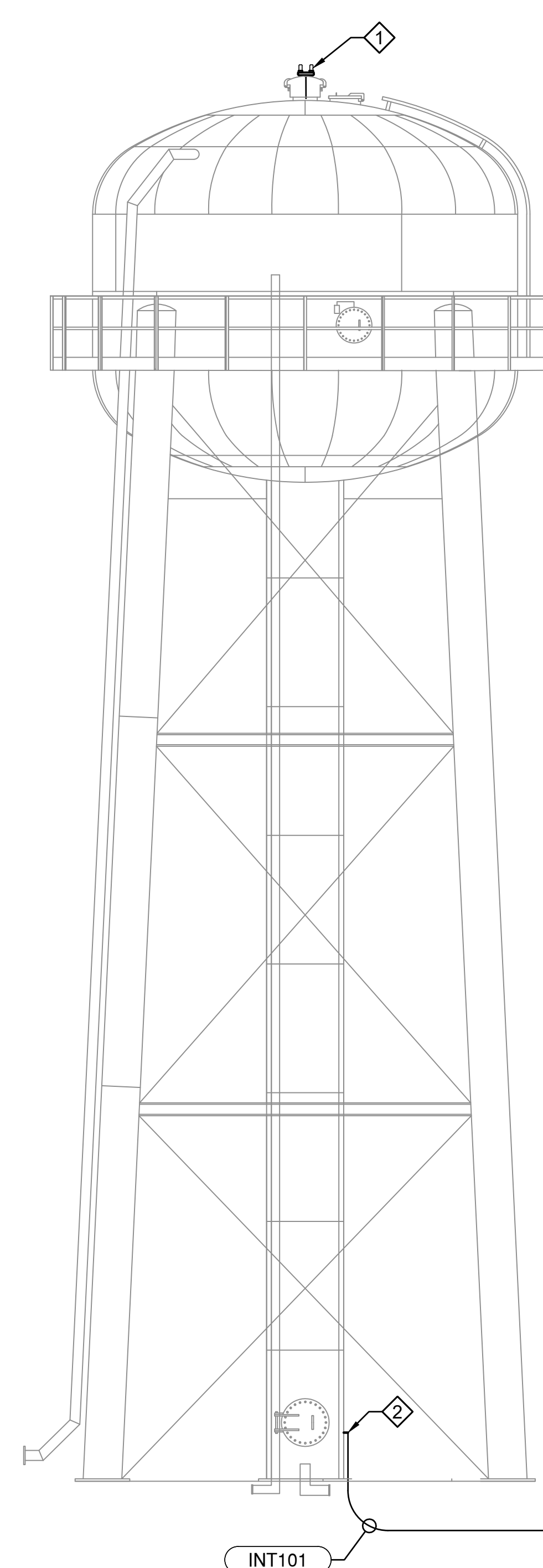
- NOTES:**
1. EST LIGHTS SHALL NOT BE TIED TO PHOTO CELL. PROVIDE 3 WAY SWITCH AT BASE OF EST INSIDE HATCH DOOR.
  2. VIEW IS SHOWN WITH OUTER DOOR REMOVED.

**4 LIGHTING CONTROL PANEL DETAIL**  
 N.T.S.

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<small>STATE OF TEXAS REGISTRATION NO. F-828                  11700 KATY FREEMAN SUITE 800 HOUSTON, TX 77079                  WWW.KIMLEY-HORN.COM                  © 2024 KIMLEY-HORN AND ASSOCIATES, INC.</small>			
KHA PROJECT	067785106	DATE	August, 2025
SCALE:	AS NOTED	DESIGNED BY:	SM
DRAWN BY:	TA	CHECKED BY:	EB
<b>CITY OF GALVESTON                  UTMB EST                  REHABILITATION</b>			
<b>ELECTRICAL                  DETAILS SHEET 3</b>			
SHEET NUMBER			E-603

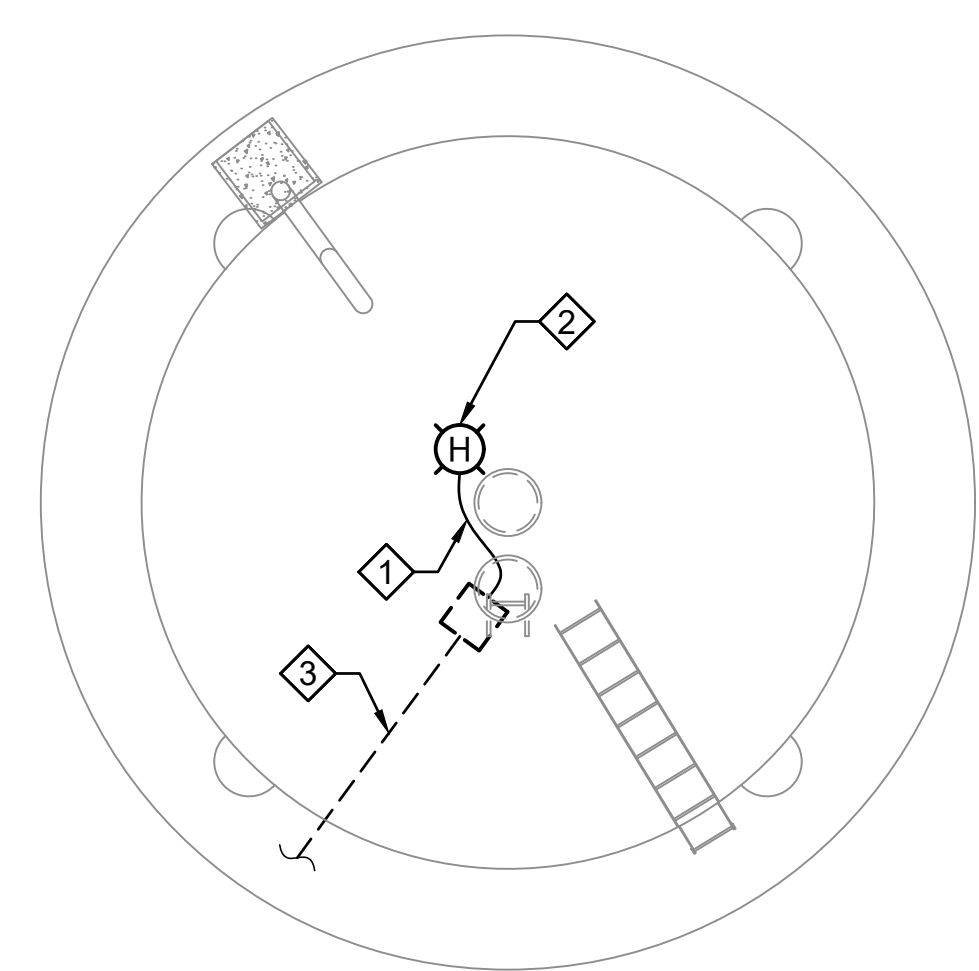
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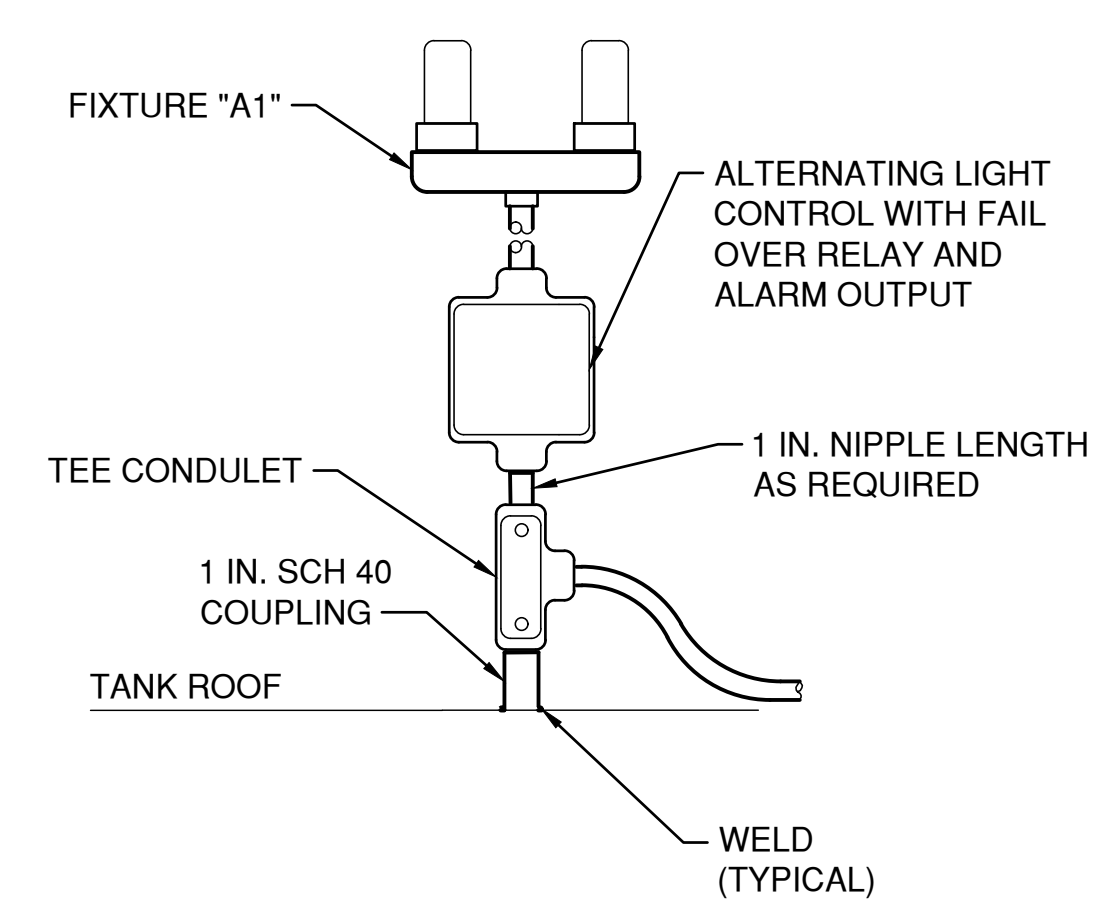
- ELEVATED STORAGE TANK ELEVATION VIEW KEYED NOTES:**
- ① OBSTRUCTION LIGHT FIXTURE "A1".
  - ② PROVIDE NEW CONDUIT PATH FOR EST INTRUSION ALARM AND FAA MONITORING AND FAULT SIGNALS BACK TO CHEMICAL CONTROL (SCADA) PANEL.

**ELEVATED STORAGE TANK ELEVATION VIEW**  
N.T.S.



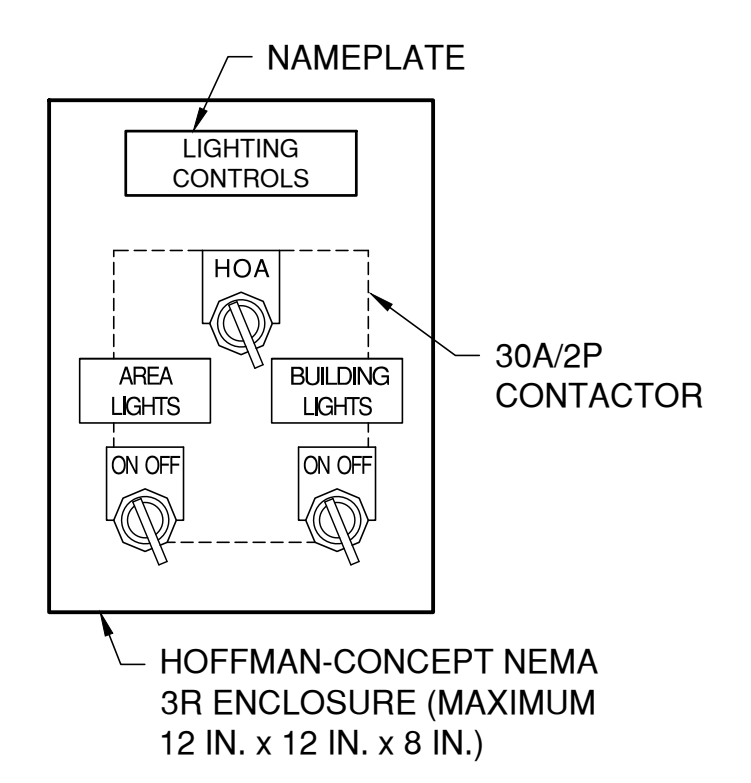
- ELEVATED STORAGE TANK PLAN VIEW KEYED NOTES:**
- ① PULL NEW WIRING THROUGH EXISTING CONDUIT.
  - ② PROVIDE NEW OBSTRUCTION LIGHT. RE: OBSTRUCTION LIGHT INSTALLATION DETAIL.
  - ③ PROVIDE IN LINE CONTROLLER PER OBSTRUCTION LIGHT INSTALLATION DETAIL. ROUTE MONITORING AND FAULT SIGNALS TO CHEMICAL CONTROL (SCADA) PANEL.

**ELEVATED STORAGE TANK PLAN VIEW**  
N.T.S.



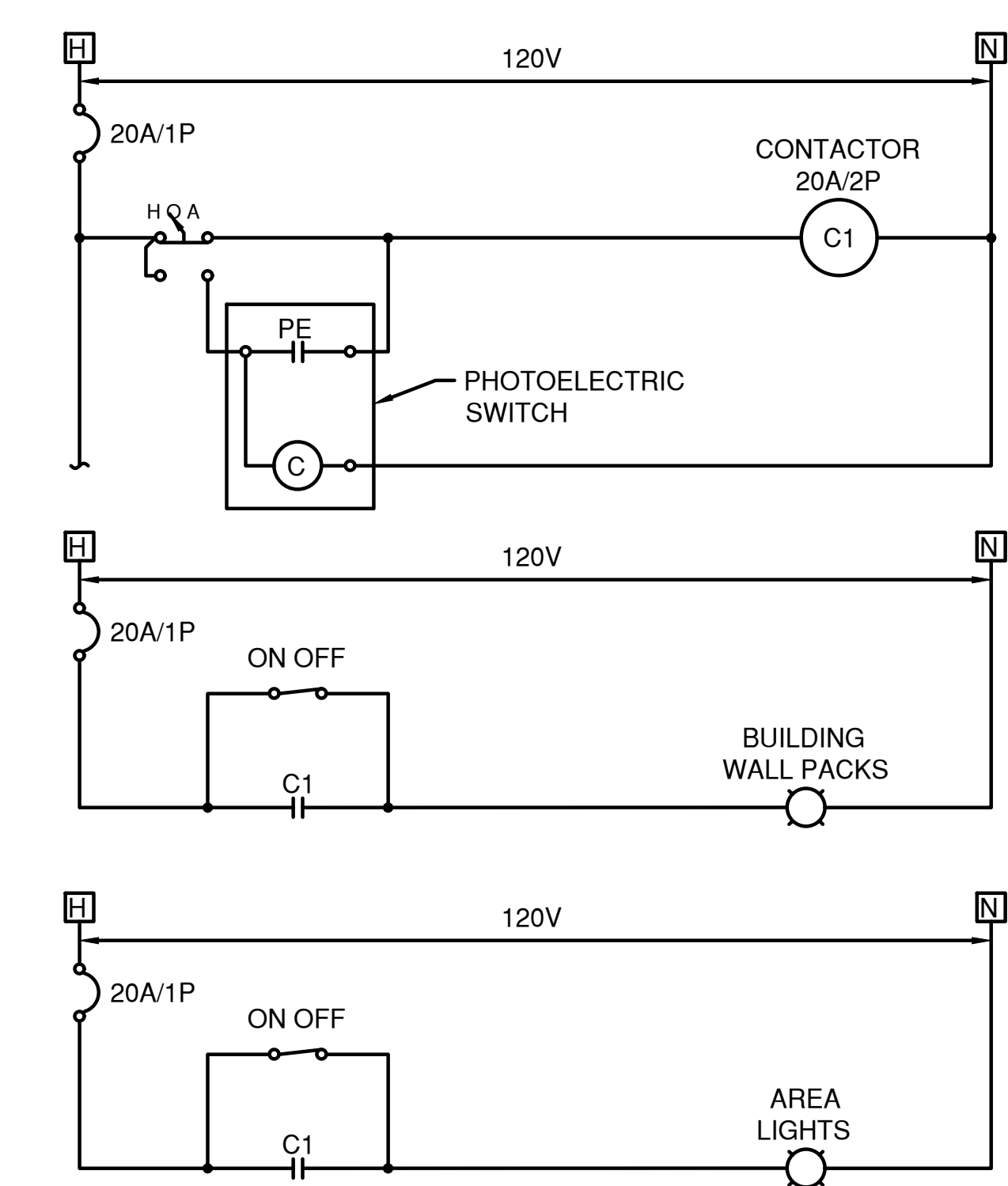
**OBSTRUCTION LIGHT INSTALLATION DETAIL**  
N.T.S.

**GENERAL NOTES:**  
 1. I/O MODULES SHOWN ON THIS SHEET ARE DUPLICATE PER CITY STANDARDS. ALL SIGNALS SHALL HAVE DUPLICATE SIGNALS FOR SCADA INTEGRATOR USE. PROVIDE ADDITIONAL RELAYS AS NEEDED.



**NOTES:**  
 1. VIEW IS SHOWN WITH OUTER DOOR REMOVED.

**LIGHTING CONTROL PANEL DETAIL**  
N.T.S.



**EST AREA LIGHTING CONTROL DIAGRAM**

NO.	REVISIONS	DATE	BY

**Kimley >>> Horn**

STATE OF TEXAS REGISTRATION NO. F-828  
 11700 KATY FREEMAN SUITE 800 HOUSTON, TX 77079  
 WWW.KIMLEY-HORN.COM  
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KHA PROJECT	067785106
DATE	August, 2025
SCALE	N/A
DESIGNED BY:	SM
DRAWN BY:	TA
CHECKED BY:	EB

**CITY OF GALVESTON  
 UTMB EST  
 REHABILITATION**

**ELECTRICAL DETAILS  
 SHEET 4**

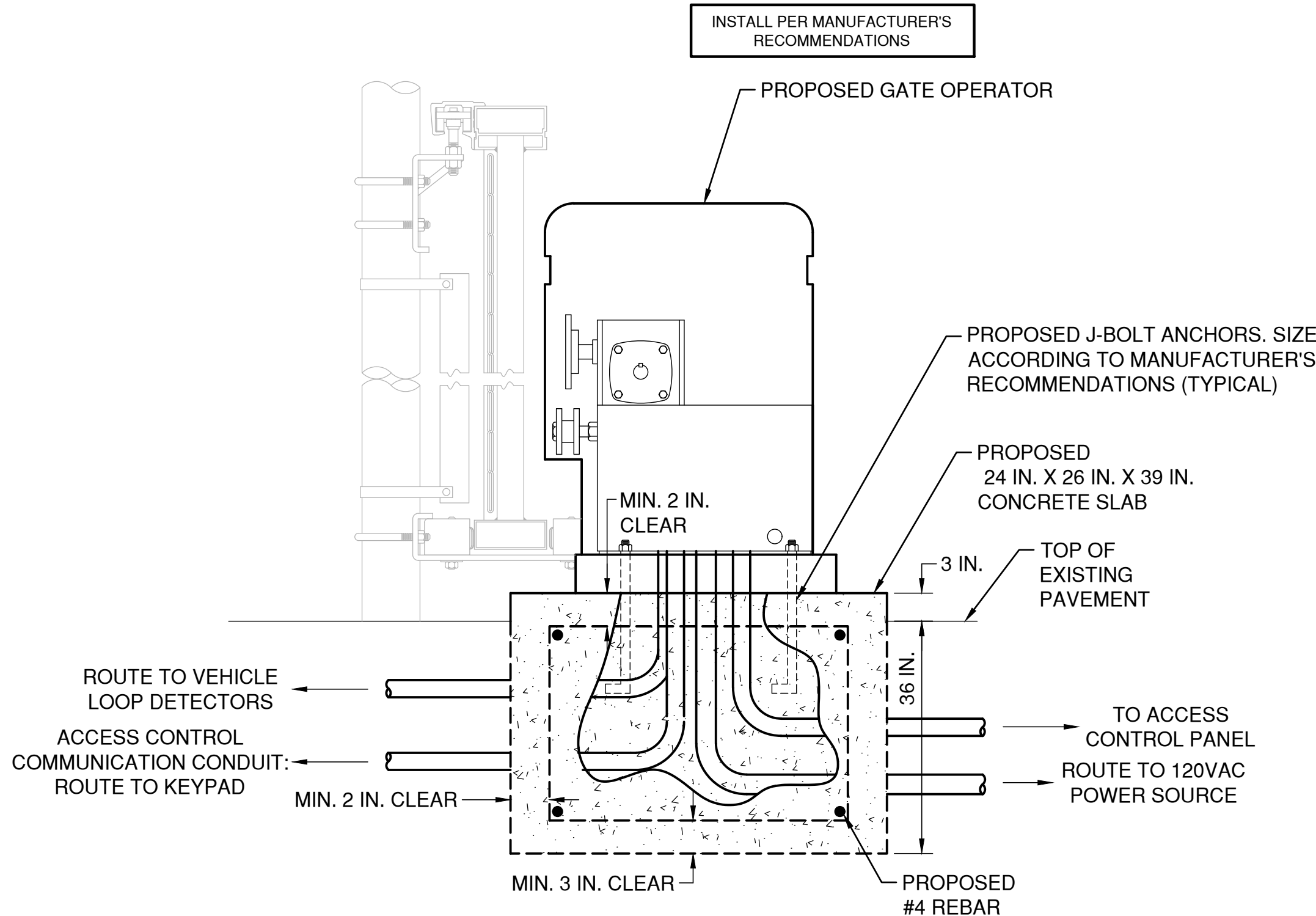
SHEET NUMBER  
**E-604**

**BURRER  
 ENGINEERING**

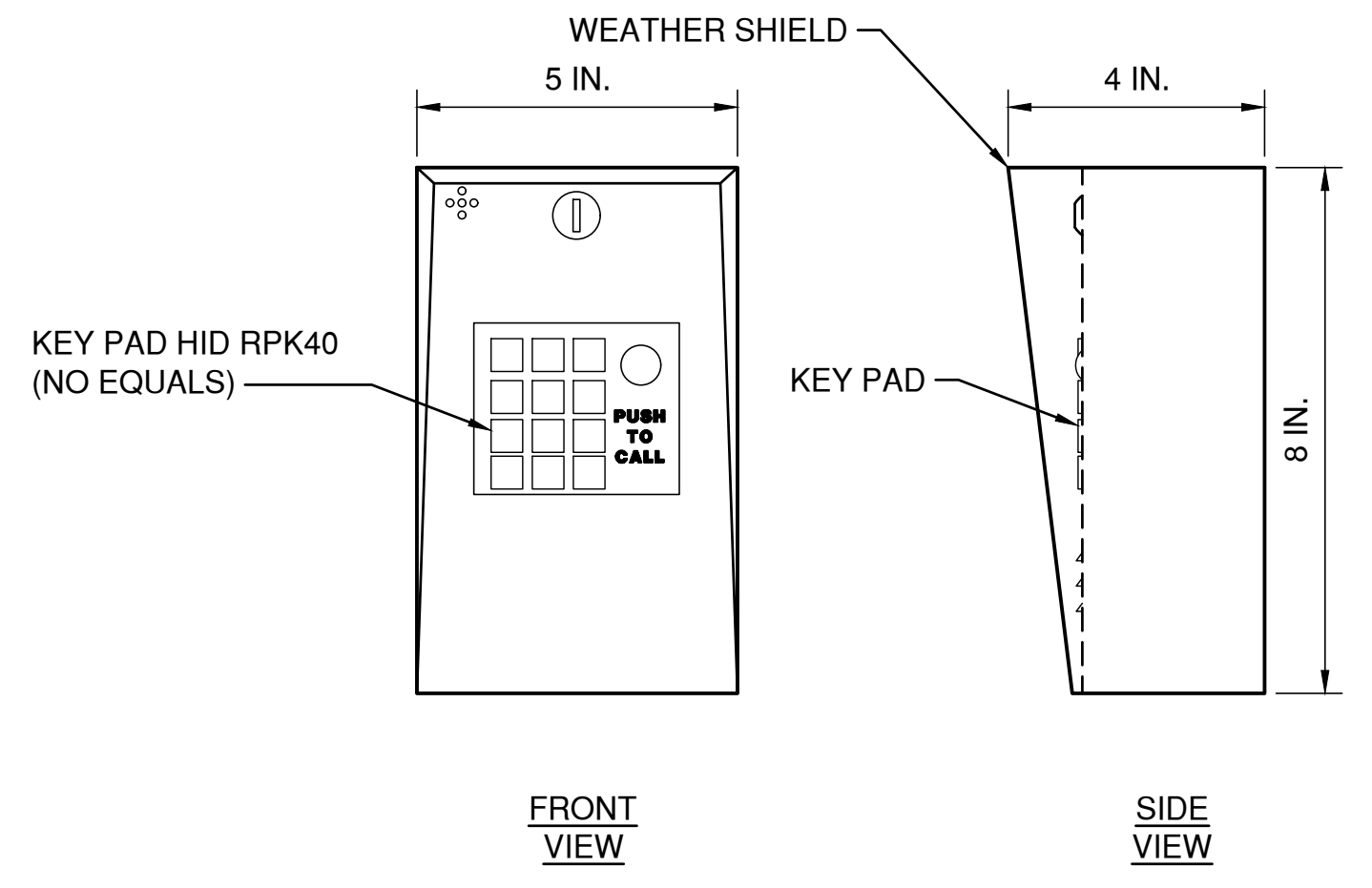
17217 N. Eldridge, Tomball, TX 77377  
 Tel: 832-761-5220  
 email: info@burrereng.com

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

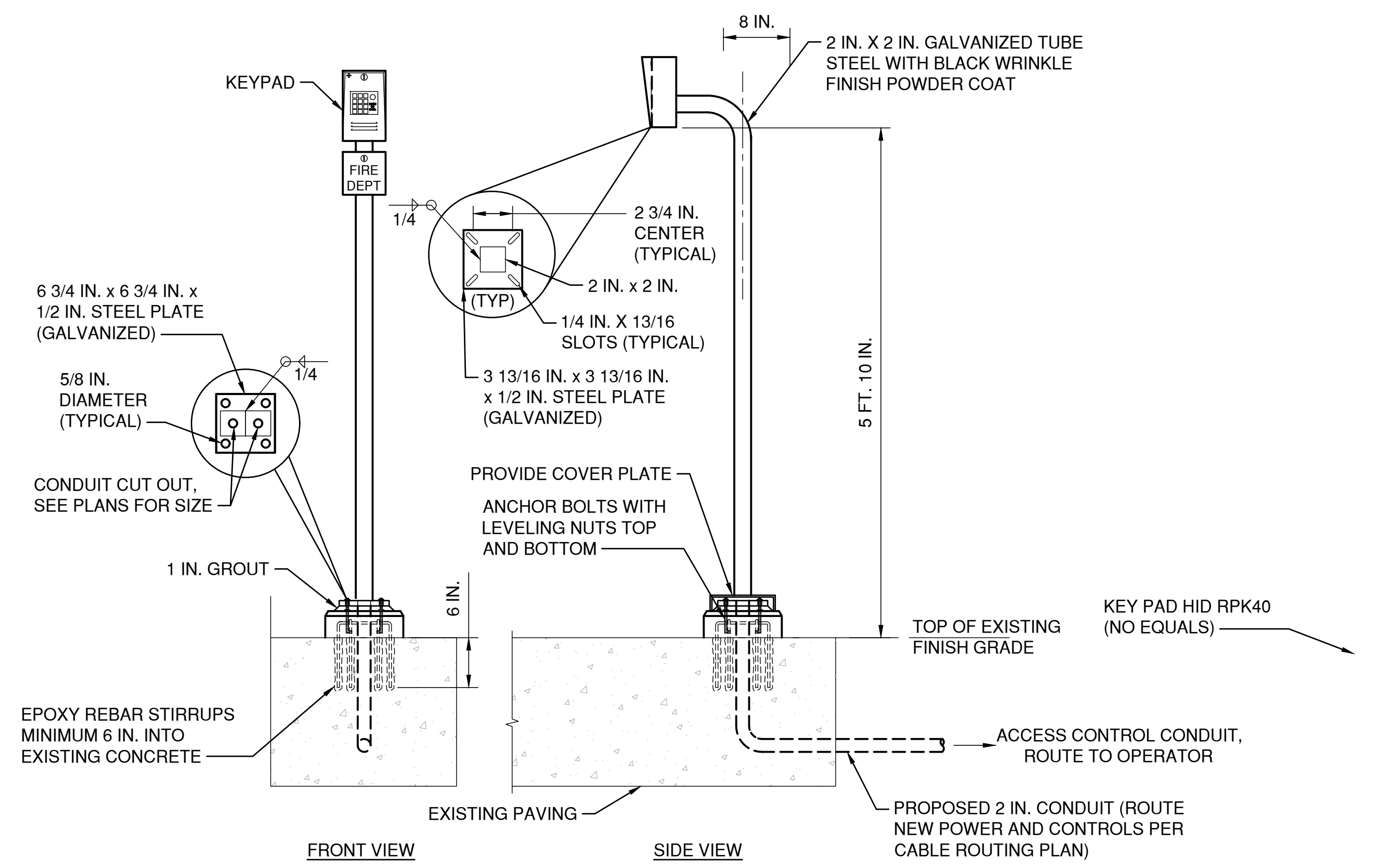
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**SLIDE GATE OPERATOR DETAIL**  
N.T.S.



**KEYPAD ENLCOSURE DETAIL**  
N.T.S.



**ENTRY GATE KEYPAD PEDESTAL DETAIL**  
N.T.S.  
NOTE:  
1. BOLLARD PROTECTION REQUIRED.

**SLIDE GATE OPERATOR INSTALLATION NOTES:**

1. REFER TO GATE MANUFACTURER'S INSTALLATION MANUAL FOR INSTALLATION METHODS AND REQUIRED PRACTICES.
2. SEAL LEAD WIRE IN CONDUIT TO PREVENT MOISTURE SEEPAGE INTO CONDUIT.
3. COORDINATE WITH POWER COMPANY FOR MAINTENANCE ACCESS.
4. PROVIDE FIRE DEPARTMENT LOCK BOX ON PEDESTAL.
5. CONNECTIONS TO GATE OPERATOR VARY BY VENDOR. CONTRACTOR SHALL COORDINATE WITH VENDORS FOR FINAL WIRING CONNECTIONS. CONTRACTOR SHALL COORDINATE WITH CITY FOR DESIRED OPERABILITY PRIOR TO CONSTRUCTION.
6. CONTRACTOR SHALL CONTACT VENDOR REPRESENTATIVES TO DETERMINE PRECISE WIRING CONNECTIONS FOR CUSTOM CONFIGURATIONS. SUBMIT DEVIATIONS FOR ENGINEER APPROVAL.
7. BASIS OF DESIGN IS A STAND ALONE KEYPAD GATE OPERATOR FOR ENTRY WITH NO ASSOCIATED CARD READER OR DIGITAL ACCESS CONTROL. KEYPAD CODE SHALL BE CAPABLE OF CHANGING AT THE LOCAL CONTROL PANEL. UPON OPEN GATE WILL NOT AUTOMATICALLY CLOSE. PROVIDE ADDITIONAL PUSH TO CLOSE BUTTON ON EXTERIOR FOR EXIT. NO ETHERNET CONNECTION OR COMMUNICATION WILL BE TIED INTO GATE CONTROL.

NO.	REVISIONS	DATE	BY

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STATE OF TEXAS  
 C. SAAD MAHMOUD  
 127648  
 PROFESSIONAL ENGINEER  
 08-01-2025

KHA PROJECT	067785106
DATE	August, 2025
SCALE:	AS NOTED
DESIGNED BY:	SM
DRAWN BY:	TA
CHECKED BY:	EB

**CITY OF GALVESTON**  
**UTMB EST**  
**REHABILITATION**

**ELECTRICAL**  
**DETAILS SHEET 5**

SHEET NUMBER  
**E-605**

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